THE IRON AGE

New York, July 23, 1925

ESTABLISHED 1855 VOL. 116, No. 4

Eight-Inch Merchant Bar Mill

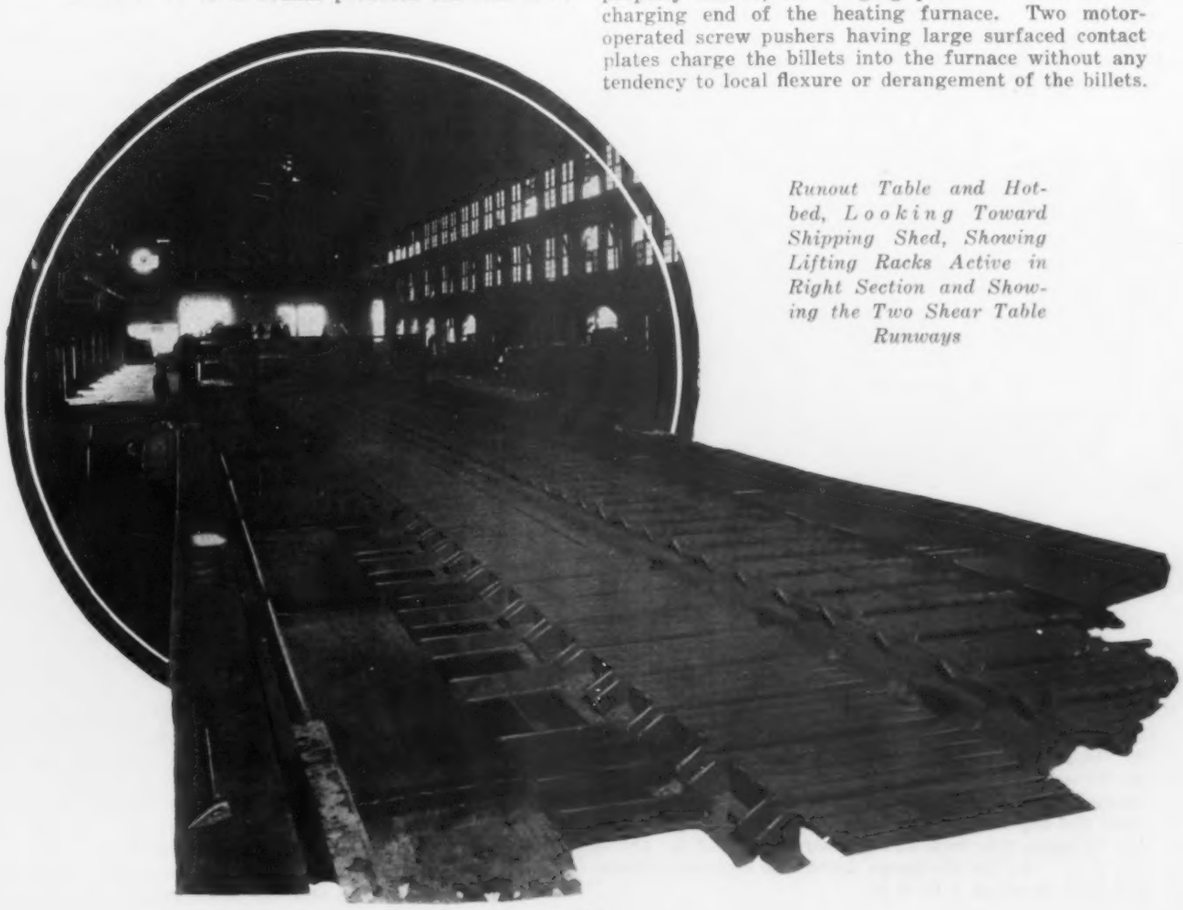
Continuous and Looping Trains of the Donner Steel Co. at Buffalo—Sections and Speeds Indicated

AMONG the lighter bar mills of the country for which an enviable record of costs and performance is exhibited, the 8-in. mill of the Donner Steel Co., Inc., at Buffalo, is notable. This mill is one of three bar mills at the plant, arranged in a group of three parallel sets of buildings, such that billets are received from a storage yard at one end and finished product proceeds from the other into a shipping building. The product from the 8-in. mill consists of rounds and squares from ¼ to ¾ in., Donner reinforcing bars, flats and coil stock in coils weighing up to 300 lb. Practically all products of this mill are made from 1¾-in. x 30-ft. billets, with an occasional use of 2¼-in. billets.

An order of ¾-in. rounds produced 322 tons in 10 hr. operation. A single hour's run of the mill has shown a delivery of 39 tons of ¾-in. rounds.

The mill building is a well lighted and ventilated brick and steel structure, 72 ft. 9 in. width and 514 ft. length, the height under the eaves being approximately 35 ft. A lean-to, 20 x 200 ft., shelters the motor drives, switch boards, shafts and gearing. Another, 20 x 60 ft., provides for offices and other facilities. The entire mill is under the command of a 10-ton Morgan traveling crane.

Billets for the bar mills are received at the dock and piled in lines parallel to the movement of steel in the mills. A small amount of handling on skidways and transfer roll tables brings the groups of billets, properly ranked, on charging plates in front of the charging end of the heating furnace. Two motor-operated screw pushers having large surfaced contact plates charge the billets into the furnace without any tendency to local flexure or derangement of the billets.



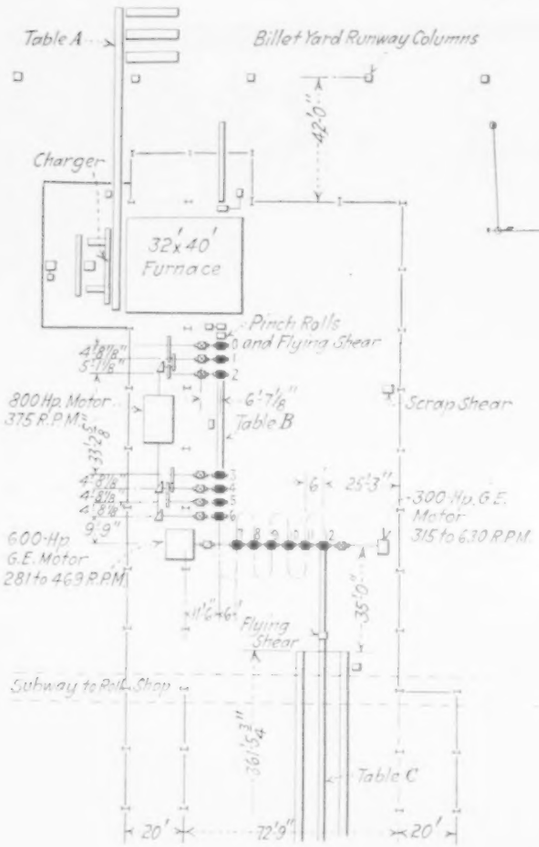
Runout Table and Hot-bed, Looking Toward Shipping Shed, Showing Lifting Racks Active in Right Section and Showing the Two Shear Table Runways

These charging movements of the pushers are periodically applied throughout the bed of billets in the furnace, such as to bring the heated material within the range of action of the discharging device. The latter, operated in accordance with signals from the mill operatives, moves the billets endwise from the furnace.

The furnace has internal plan dimensions of 32 x 40 ft. The drop of the floor from charging end to discharge doors is 9 in. in the length of 40 ft. The roof of the furnace is flat, as distinguished from an arched or ribbed construction, and consists of a number of special fire bricks supported from cross beams passing over the top of the furnace. At the charging end of the furnace, this roof has a clearance of 12 in. above the floor. At the discharge doors, the clearance above the floor is about 3 ft. 5 in.

Water-cooled skid pipes are not used, in view of the general maintenance problems and the objectionable cold spots always produced on the billets. Instead of these, satisfactory service is obtained from the use of 3 x 3 in. solid billets as rest bars, imbedded in the brickwork of the furnace floor to the extent that the heated bars just clear the floor. This requires careful setting of the 3 x 3 in. rest bars, but the end justifies the means. To avoid troubles from extreme temperature changes, the rest bars are made of short segments.

Fuels supplied to this furnace are tar and gas from by-product coke ovens, and occasionally oil. Sometimes gas is burned in combination with liquid fuels, though it is applied through separate burners. There are 14 burners for gas and the same number for the



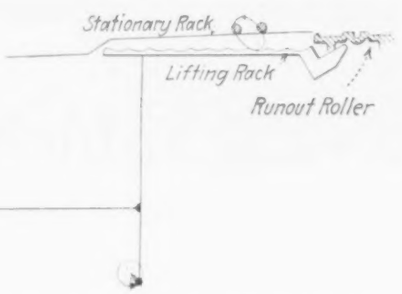


Fig. 3—Kinematic Representation of Motion of Lifting Rack, Showing Elliptical Path Taken by Bar in Advancing Across Hotbed from Mill Runout to Shear Table Runway

Fig. 1 (at Left)—Plan of 8-In. Semi-Continuous Merchant Mill, Showing Arrangement from Billet Yard to Runout Table. Roll speeds for the seven stands in the two sections of the continuous mill are:

Stand No.	R.p.m.	Stand No.	R.p.m.
0	30.9	3	90.3
1	44.0	4	134.5
2	63.75	5	200.7
		6	303.7

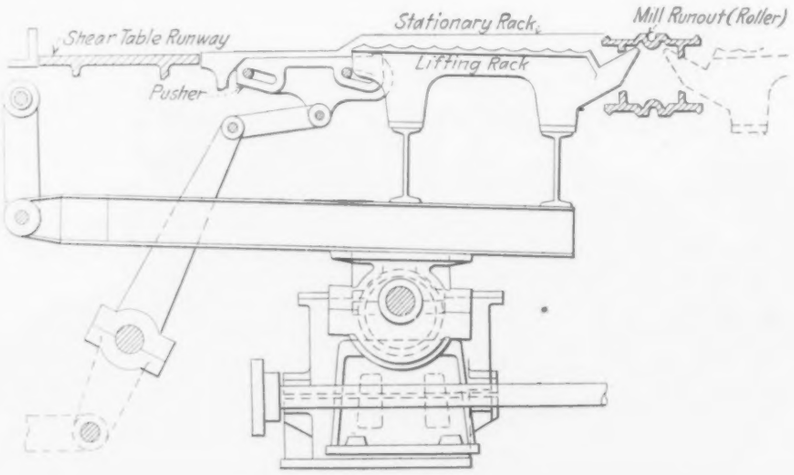
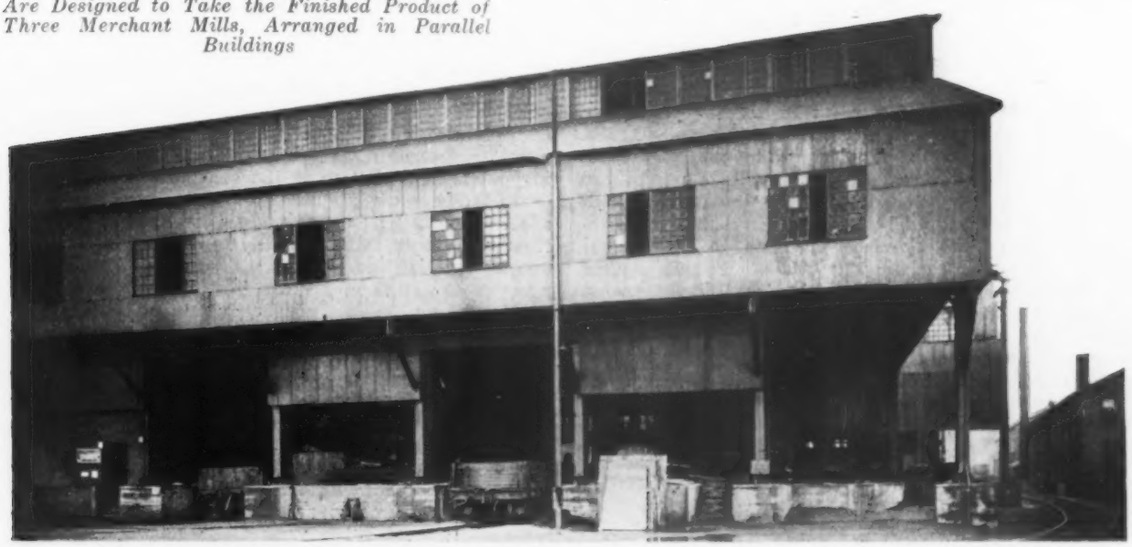


Fig. 2—Partial Section Through Hotbed, Showing Lifting Rack Mechanism and Pusher Arrangement

"Depressed" Tracks in the Shipping Department Are Designed to Take the Finished Product of Three Merchant Mills, Arranged in Parallel Buildings



liquid fuels. The latter enter the end of the furnace about 18 in. from the roof. The gas burners are arranged immediately underneath the tar burners, with sufficient pressure on the gas mains to permit delivery against internal furnace conditions. A certain amount of air enters the furnace through free openings surrounding the gas burners, though much of the air supply is delivered from a fan through branch pipes arranged between the tar burners.

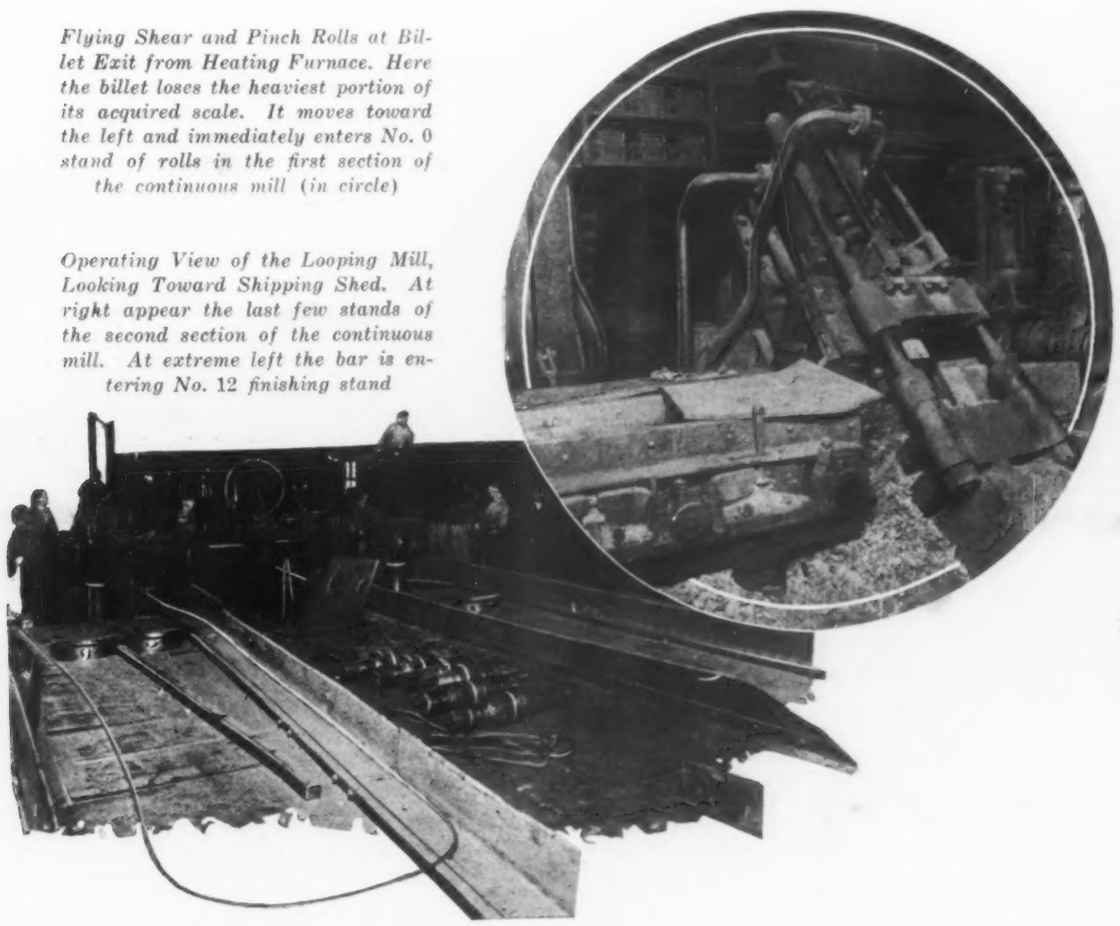
Roll Stands, Tables and Equipment

Discharging a heated billet from the furnace end by means of end contact with a motor-operated pusher rod brings the billet within the control of a pair of motor-driven pinch rolls, which grip the billet through the action of steam on a vertical piston. On the mill side of these rolls is placed the flying shear.

The bar passes through two groups of continuous rolls, having three and four stands respectively of rolls of 11-in. pitch diameter and 20 in. length with 9 x 6½-in. necks. From these the bar goes to the seven stands of looping trains, made up of rolls 7½ to 9 in. pitch diameter and 20-in. length, except for the last or finishing pass, which employs a separate roll and driving motor. With this exception the looping trains are all driven by a single motor. The general arrange-

Flying Shear and Pinch Rolls at Billet Exit from Heating Furnace. Here the billet loses the heaviest portion of its acquired scale. It moves toward the left and immediately enters No. 0 stand of rolls in the first section of the continuous mill (in circle)

Operating View of the Looping Mill, Looking Toward Shipping Shed. At right appear the last few stands of the second section of the continuous mill. At extreme left the bar is entering No. 12 finishing stand



ment of each roll stand is that of a three-high train with either the top or the bottom roll replaced by a spindle connection, in accordance with relative position of the mill housings and the requirements of the mill.

In this manner, power is transmitted through the middle rolls and spindles while suitably arranged pinions permit the driving of the companion rolls. When rolling some of the larger sections, like ¾-in. rounds, some of the earlier or roughing passes are idle, while a ⅜-in. round would employ nearly all of the passes in the mill. After the bar leaves the continuous trains, it is looped by hand to the several passes, including the finishing train. By this method of rolling, which avoids any excessive displacements of metal in any one pass, a more homogenous structure of the rolled bar and, incidently, a better surface condition are obtained, all of which assume importance in fabricating alloy steels. Taking the ⅜-in. rounds as an illustration, the mill cycle would involve the tabulated relations between passes, as derived from the drawings.

Eight-Inch Mill Rolling 1¾ x 1¾-In. Billets to ⅜-In. Rounds in 11 Passes

No. of Roll Stand	R.p.m.	Pass No.	Sectional Contour	Sectional Dimensions Leaving the Stand (Inches)	Sectional Area, Sq. In.	Ratio of Areas
0	30.9	..	rectangle	1 13/16 x 1½	2.91	1.00
1	44.0	1	oval	.....	2.26	1.29
2	63.75	2	square	1¼ x 1¼	1.55	1.46
3	90.3	Idle	square	.....	....	1.00
4	134.5	3	rectangle	1½ x 13/16	1.26	1.23
5	200.7	4	oval	1 13/16 x ⅝	0.85	1.48
6	303.7	5	square	13/16 x 13/16	0.54	1.58
7	....	6	diamond	1 1/16 x 1/16	0.43	1.25
8	....	7	square	7/16 x 7/16	0.32	1.34
9	....	8	diamond	11/16 x 1/16	0.23	1.39
10	....	9	square	1/16 x 1/16	0.18	1.28
11	....	10	oval	5/16 x 1/16	0.15	1.20
12	....	11	round	⅜ diameter	0.112	1.34

General plan and arrangement of the 8-in. mill are shown on Fig. 1, with information concerning the relative speeds of the roll trains, based on the synchronous speeds of the a.c. motors. It is to be understood that the speed of the motor attached to the looping trains is determined within the limits of 281 and 469 r.p.m. by a Scherbius set. The finishing train is operated by a d.c. motor with rheostatic control of the speed. Maximum repeated peak load conditions have shown 1125 hp. for the continuous train, 980 hp. on the looping trains and 120 hp. on the finishing rolls when the mill is producing ⅜-in. rounds from 1¾ x 1¾-in. billets. After the bar leaves the continuous trains, it is delivered by hand to succeeding passes. A transfer switch on the delivery side of the finishing train, which is hand operated, directs the finished bar to the runout rollers located at the middle of the width of the hotbed.

Successful handling of the light sections and long bars to which the mill is adapted is due in large measure to the especially well-designed hotbeds. These are in duplicate form and construction and are symmetrically arranged on each side of the runout rollers. The beds are flat and perfectly alined, due to the use of a substantial concrete mat underlying all foundations and supports. They have a total length of 361 ft. and an overall width of 13 ft. 3 in., exclusive of the shear table runout. All of this width is available for gradual cooling of the bars and offers a considerable storage space.

The bar-supporting surface is made of a number of well-designed cast iron plates in which openings are provided for air circulation and also for the lifting and transporting racks. The latter are operated by suitable mechanism connected with horizontal shafts running the entire length of the hotbeds. These shafts are turned by motors having the necessary gear and link connections. Fig. 2 shows a cross section of one side of the hotbed and of one of the runout rollers, while Fig. 3 shows the kinematic elements of the operating mechanism.

It is seen that any part of the supporting surface of the lifting racks traverses a path which is approximately an ellipse. The lifting and side transportation of a group of hot bars from the mill occurs during that part of the elliptical path which is above the plane of the cast iron rest plates of the hotbed. One rotation of the intermittently driven shaft below the hotbed causes one step, in the transportation of all bars resting on the hotbed, toward the storage plate.

In the course of regular operation of the mill there are frequently ten bars in transit, by the step process, from the runout rollers to the storage rack. The latter, with a surface somewhat depressed below the plane of the stationary racks, permits a close parallel ranking of the finished product and its subsequent delivery to a shear table through the use of the pusher and connected oscillating lever, as shown clearly on Fig. 2. The motors connected to all of the hotbed mechanism are subject to hand control, which in the case of the lifting racks must synchronize with the deliveries of bars from the finishing rolls.

Fig. 2 shows the further extension of the storage rack to the shear table and runout, though the rollers for this table are not shown. From the instant of complete delivery of a bar from the rolls until its final delivery to the storage rack, the bar is on the hotbed about 4½ min. As the storage racks will accommodate from 30 to 50 bars before they must be pushed onto the shear table runway, the bars are on the hotbeds for at least 20 minutes before they must go to the shears.

At the end of the hotbeds and in line with each shear table shown in section on Fig. 2, is located an open gap shear of ample size to handle the multiple cuts on a group of bars. For rounds and many other sections the end distortion of a bar in the process shearing is avoided by the accurate shaping of notches in the shear blades. An extension of the shear table into the shipping building provides for stops, length gages and delivery into cradles at the side for bundling. The total length of the tables extending into the shipping building is 70 ft. There are two scale platforms arranged along these tables and each platform supports six cradles. Bars can be rapidly cut and assembled in the cradles for any length up to 60 ft., in accordance with the orders for the material.

The entire mill, with its equipment, was designed and installed by the organization of the Donner Steel Co., Inc., of the period of 1919-1920.

Improvement in Patent Office Conditions

Decided improvement in the status of work at the Patent Office is shown in the first detailed report submitted to the Secretary of Commerce since the office was transferred to the Commerce Department on April 1 last. There were 43,000 cases pending on June 30, last, against 59,000 a year ago; 72,475 on June 30, 1923; and 67,608 at the end of the fiscal year 1922.

According to the Patent Commissioner's report, during the year just closed his office has decreased the average time that applications must await official action by two months in new work and one month in old work, so that the average time that a new application must wait to receive official action has been reduced from five months to three, and the average time an amended application must await official action has been reduced from 3.4 months to 2.3 months.

Blast Furnace Proposed for Los Angeles

LOS ANGELES, July 16.—A coke blast furnace may be erected in this city or vicinity, following the completion of an investigation now under way, financed by Eastern capital. There is an abundance of iron ore of good quality in California, but coke or coking coal would have to be shipped in from a considerable distance either by rail or by water. There is at present no coke blast furnace on the Pacific Coast, the nearest stack being that of the Columbia Steel Corporation at Provo, Utah, which was completed about a year ago.

Calculating Cupola Mixtures

Graphic Solution of Problems of Mixture Calculation for Furnaces and Cupolas — Parallel Coordinates Specially Adapted to This End—Apparatus Constructed Upon This Principle

BY BÉLA SZÖKE*

IN the working of cupola and open-hearth furnaces we are able to predetermine the composition of the liquid iron with a precision sufficient for practice, if we know the mixture of the charges. We wish always to have a product of a prescribed composition, since the physical properties of the casting depend upon the percentage of sulphur, phosphorus, silicon and manganese admixtures. Thus these ingredients are varied for different kinds of castings. As to phosphorus and sulphur we demand only that their percentages do not surpass a settled ratio; on the contrary, we want an exact quantity of manganese and silicon in the casting. Because of that, our foundries have to deal permanently with the question: What proportion shall be taken from the different kinds of pig iron, with given contents in silicon and manganese, to obtain a casting containing the two admixtures in the proportions wanted, supposing we use with them a certain quantity of scrap with the same composition as the casting wanted?

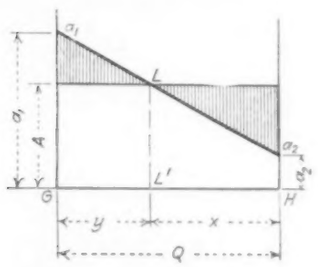


Fig. 1—Usual Graphic Solution in the Case of Two Varieties of Pig Iron

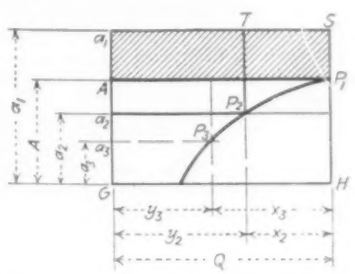


Fig. 2 — The Locus of the Corresponding Values of y and a Is an Equilateral Hyperbola

If the casting is to contain A per cent of silicon and B per cent of manganese, and the charge contains P per cent of the scrap, then the percentages x, y, z of each kind of pig iron I, II and III must be determined. Thus:

Kind of iron	Si, Per Cent	Mn, Per Cent	To Take to the Charge
			P Per Cent
Scrap	A	B	
Pig iron I	a_1	b_1	x
Pig iron II	a_2	b_2	y
Pig iron III	a_3	b_3	z

The calculation is not at all difficult; three linear equations must be solved:

$$a_1 x + a_2 y + a_3 z = A\ (100 - P) = AQ \ldots (1)$$
$$b_1 x + b_2 y + b_3 z = B\ (100 - P) = BQ \ldots . (2)$$
$$x + y + z = 100 - P = Q \ldots . (3)$$

But a man in charge has ordinarily neither the leisure nor the disposition to solve equations, instead of which he carries through test calculations and is satisfied with an approximation. Naturally it happens sometimes that multitudes of trials lead to no result, because the problem has no solution whatever (negative roots have no meaning) and other kinds of pig iron should be used. Therefore it is evident that a clear and easy method for the graphic solution of this task is desirable for the practical man.

In case only one ingredient of the casting is to be fixed, and two kinds of pig iron are charged into the cupola, the solution is simple.† The problem in this case is the following: the first iron contains a_1 per cent, the second a_2 per cent of silicon; how much is to be taken from the first and second kinds to have the desired content of silicon in the product, if the quantity of scrap used is P per cent?

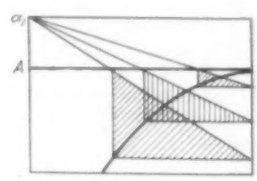


Fig. 3—Construction of the Equilateral Hyperbola

Kind of iron	Si, Per Cent	To Take to the Charge
		P Per Cent
Scrap	A	
Pig iron I	a_1	x
Pig iron II	a_2	y

In Fig. 1 the distance $G\,H = x + y = 100 - P = Q$. Perpendicular to the bases we plot the value a_1 from the point G, similarly the value a_2 from the point H. The connecting line $a_1\ a_2$ cuts at the point L the horizontal line drawn at altitude A. The values of the percentages sought are $x = L'H$, $y = G\ L'$. This construction is nothing but the solution of the following two equations:

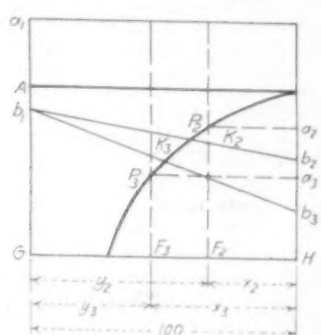


Fig. 4—Determination of x_2, y_2 and x_3, y_3

$$a_1 x + a_2 y = A\ (100 - P) = AQ$$
$$x + y = Q$$

From the hatched triangles: $y : x = (a_1 - A) : (A - a_2)$ and hence

$$a_1 x + a_2 y = A\ (x + y) = AQ \ldots . (4)$$

Osann employs the same procedure in the case of three kinds of pig iron, and determines the three unknowns x, y, z of equations (1), (2), (3), as follows:‡ First we mix iron I with II, then I with III; these two mixtures are to have the prescribed richness of silicon

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†Osann: Calculation of Mixtures with the Aid of Equations, *Giesserei Zeitung*, No. 3, 1920.

‡Scheme and Example of a Calculation of Mixtures, *Giesserei Zeitung*, 1924, No. 15.

A; then we calculate in what proportion the two mixtures α and β are to be mingled, to obtain a mixture which contains the other ingredient in the desired proportion. If we know the percentages of each kind of pig iron to make the mixtures α and β, and those for the ultimate mixing of the two mixtures α and β, we can find the unknowns x, y, z.

According to this proceeding, the problem is solved partly by the graphic method based on Fig. 1, partly with the aid of calculation. However, this method to determine the unknowns x, y and z is lengthy and not clear enough. Going a little further in this direction, the following graphic solution leads to a result with

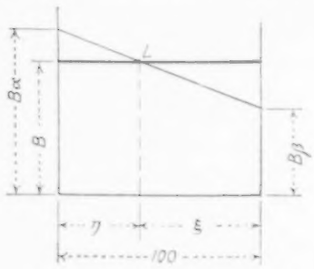


Fig. 5—Determination of the Mixing Ratio of α and β

less calculation. Let a_1 be the percentage of silicon contained in the first kind of pig iron and A that of the mixture α (see Fig. 2). Then all the points with the ordinates a_2, a_3 . . . and abscisses y_2, y_3 . . ., which mark the necessary percentage of the second kind of pig iron, lie on a hyperbola. This hyperbola goes through the point P_1, and the constant value of the coordinate = product of one of its points is equal to the hatched quadrangle $a_1\ AP_1S = (a_1 - A)\ (x + y)$. This is easy to demonstrate, if we set the equality of the quadrangle areas $a_1\ AP_1S$ and $a_1\ a_2P_2T$, as follows:

$$(x_2 + y_2)\ (a_1 - A) = (a_1 - a_2)\ y_2;$$

hence $a_1\ x_2 + a_2\ y_2 = A\ (x_2 + y_2) = AQ$, which is identical with equation (4). This equilateral hyperbola can be drawn easily with the aid of the hatched triangles, as illustrated in Fig. 3.

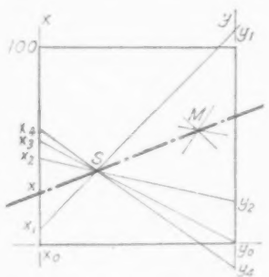


Fig. 6—Use of Parallel Coordinates

Thus the mixing ratios are determined for the mixtures α and β in Fig. 4. The mixture α consists of the pig irons I and II, containing of the first x_2 per cent and of the second y_2 per cent; the mixture β contains x_3 per cent of the I iron and y_3 per cent of the III iron, according to the equations:

$$x_2\ a_1 + y_2\ a_2 = 100\ A \ldots\ldots (A\alpha)$$
$$x_3\ a_1 + y_3\ a_3 = 100\ A \ldots\ldots (A\beta)$$

The quantity of silicon, A per cent, being thus assured in both mixtures, their manganese content likewise can be found graphically. Thus, the value b_1 is plotted from the point G and likewise b_2 from H; their connecting line meets the ordinate of P_3 in the point K_3; the distance $F_3\ K_3$ gives the percentage B_3 of manganese contained in the mixture α. Likewise the distance $F_3\ K_3$ is equal to $B\ \beta$ per cent. The mixtures α and β will then be mixed in proportions to obtain a new mixture with a manganese content of B per cent. As Fig. 5 shows, we must take for that end ξ per cent of α and η per cent of β.

If we know the per cent values x_2, y_2, x_3, y_3, ξ, η, we can find the three unknowns x, y, z, through an easy calculation. We need x per cent of the first kind of pig iron, which is contained in α as in β, and therefore

$$x = 100\ \xi/100 \times x_2/100 + 100\ \eta/100 \times x_3/100 = 1/100\ (\xi\ x_2 + \eta x_3)$$

The second pig iron is in α only, thus:

$$y = 100\ \xi/100 \times y_2/100 = \frac{\xi y_2}{100}$$

and the third only in β, in consequence

$$z = 100\ \eta/100 \times y_3/100 = \frac{\eta y_3}{100}$$

As already mentioned, this calculation is rather cumbersome and not clear enough. But the following construction leaves nothing to be desired in simplicity and clearness of solution, and a simple calculating apparatus could be made upon this principle. We first eliminate z from equations (1) and (2). If we denote $(100 - P)$ as Q it follows, from equation (3):

$$z = Q - x - y$$

Inserting this expression for z into equations (1) and (2), we have equations with two unknowns

$$x\ (a_1 - a_3) + y\ (a_2 - a_3) = Q\ (A - a_3)$$
$$x\ (b_1 - b_3) + y\ (b_2 - b_3) = Q\ (B - b_3)$$

The new coefficients of the unknowns and of the absolute term differ from the originals only in that they

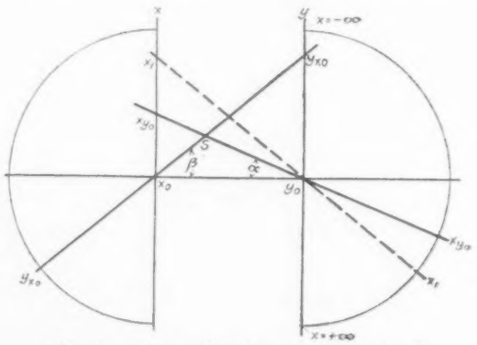


Fig. 7—Determination of the Point S

are diminished by the values of silicon and manganese contents of pig iron III. If we make the notation

$$a_1 - a_3 = \triangle a_1 \text{ and } b_1 - b_3 = \triangle b_1$$
$$a_2 - a_3 = \triangle a_2 \qquad b_2 - b_3 = \triangle b_2$$
$$A - a_3 = \triangle A \qquad B - b_3 = \triangle B$$

our latest equations take the form

$$\triangle a_1\ x + \triangle a_2\ y = \triangle AQ \ldots\ldots (1a)$$
$$\triangle b_1\ x + \triangle b_2\ y = \triangle BQ \ldots\ldots (2a)$$

To the solution and application of these equations the parallel coordinates prove profitable. These parallel coordinates are represented in Fig. 6 by the straight vertical lines x and y and are on equal scales. Their initial points are X_0 and Y_0; from these points we read off upward the positive, downward the negative, values. In the present case the scale goes from zero to 100, since the negative values and those over 100 have no

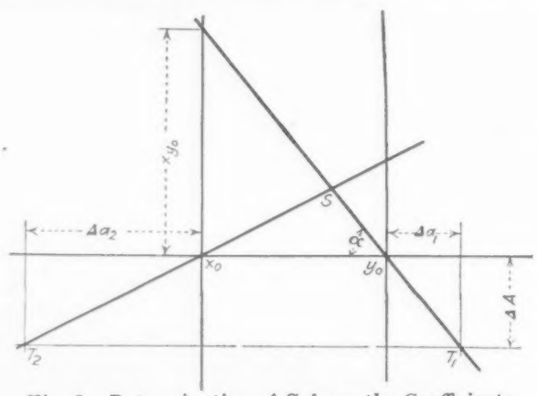


Fig. 8—Determination of S from the Coefficients

significance. The connecting line $X_0\ Y_0$ is perpendicular to the coordinates.

If we connect together all the points which correspond according to equation (1a), all these rays form a system of radiating lines with the center S. As the two series of points representing the corresponding values

of equation (1a) are in projective relation, the equation (1a) is represented by the point S. Likewise the equation (2a), which represents the manganese contents, is graphically shown by the point M. We still need those values of x and y which satisfy simultaneously the equations (1a) and (2a). These values must

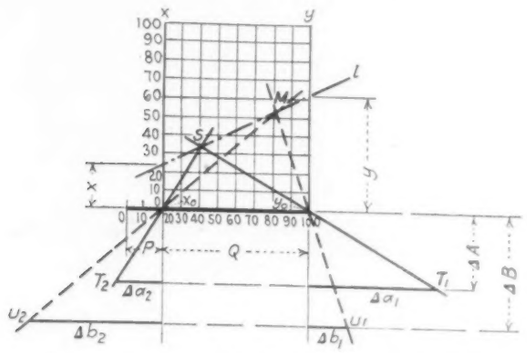


Fig. 9—Graphic Solution of Equations 1a, 2a

be shown on the scales by a straight line which belongs to both of the systems S and M; that is, the connecting line of S and M. This line is drawn in on Fig. 6 as a dot and dash line; knowing x and y, we can easily calculate $z = Q - (x + y)$.

Thus, for the solution of the problem, we need to know the points S and M. If we know two pairs of values of the function (1a), we can determine the center S of the radiating system as the intersection of the two radii. It is most advantageous to choose for that purpose the two pair of values

$$x = 0,\ y = \frac{\triangle A\ Q}{\triangle Q_2} = y_{xo}$$

$$\text{and } y = 0,\ x = \frac{\triangle A\ Q}{\triangle Q_1} = x_{yo}$$

The index by x and y shows which of the unknowns is taken as zero (Fig. 7). The calculation of x_{yo} and y_{xo} is rather troublesome, and these values could lie very far out on the scales; in this case we need one curve more to carry the scale. (See Fig. 7). To avoid this inconvenience we shall not calculate the values x_{yo} and y_{xo}, since we need only the angles α and β for tracing the lines. As Fig. 8 shows, $x_{yo} = X_o Y_o \tan \alpha$ and we saw above that $x_{yo} = Q\ \frac{\triangle A}{\triangle Q_1}$

If we make $X_o Y_o$ equal to Q, then $\tan \alpha$ must equal $\frac{\triangle A}{\triangle Q_1}$. Thus we determine the point T_1 on Fig. 8 with the coordinates $\triangle A$ and $\triangle a_1$, which are known immediately as the coefficients of equation (1a), and the line

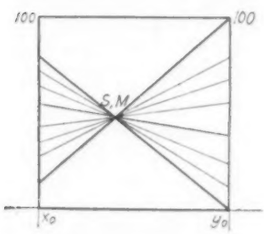


Fig. 10—S and M Coincide, Giving an Infinite Number of Solutions

$T_1\ Y_o$ gives directly the required ray. Likewise we find the point T_2, that is the second ray, and with them the point S as their intersection. As Fig. 8 clearly shows, we do not need the coefficients themselves, but their quotient $\frac{\triangle A}{\triangle Q} = m\ \frac{\triangle A}{\triangle Q} = \tan \alpha$ only, where m is any number. Thus we are able to determine the point T_1 in such manner that it falls within reach on the paper. The point M will be determined likewise but, instead of the coefficients of the equation (1a), we use those of (2a).

Determination of the roots from the coefficients of equations (1a) and (2a) is done according to Fig. 9 in the following way: We plot P on the horizontal line scaled to 100 from the zero point. At the points X_o and Y_o we erect the parallel coordinates x, y. From the coefficients $\triangle A$, $\triangle a_1$ and $\triangle A$, $\triangle a_2$ of equation (1a) we determine the points T_1 and T_2 respectively, the heavy lines of the radiating system S. We find likewise the point M with the aid of the two dash lines drawn according to the coefficients of (2a). The dot and dash line l marks the required percentages on the coordinate lines.

This construction is easily made and it requires only the simple preceding calculation of the formation of differences, as $\triangle a_1 = a_1 - a_2$, and so on. Moreover, it is clear and comprehensible, and one can judge instantly whether the supposed combination could take place or not. Thus, if the line l cuts the coordinate axes out of the section zero to 100, it is evident that the desired composition of the casting could not be obtained with the chosen components. On the contrary, if the points S and M coincide, (see Fig. 10) an infinite number of solutions exist, which must be chosen out of the domain indicated in Fig. 10, with the condition $x + y + z + P = 100$.

Apparatus Built for Rapid Determination

All the task of drawing will be saved, if we build an apparatus on the principle explained. This appa-

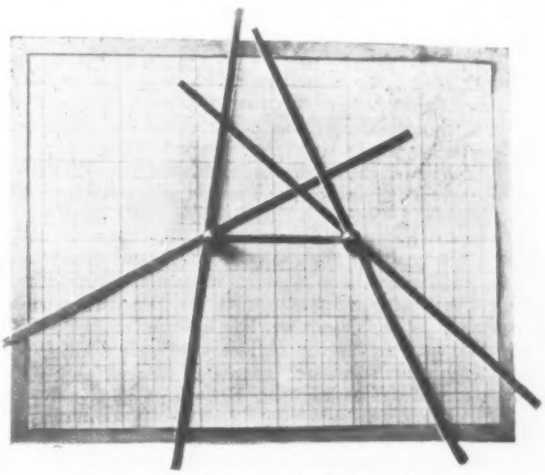


Fig. 11—Device for Calculating Mixture

ratus consists in a table with coordinate paper (Fig. 11) and two pins, each being provided with red and black indicators. The red indicator may represent the silicon, the black, the manganese. The left pin can be easily displaced in the horizontal direction. On the coordinate paper we can easily set the indicators and, putting a ruler over the section points of the red and black indicators, we find the unknowns x, y, cut off on the vertical coordinates.

As illustration: The casting is to contain $A = 0.7$ per cent silicon and $B = 0.22$ per cent manganese, the scrap shall be $P = 25$ per cent; how much shall be

(Concluded on page 258)

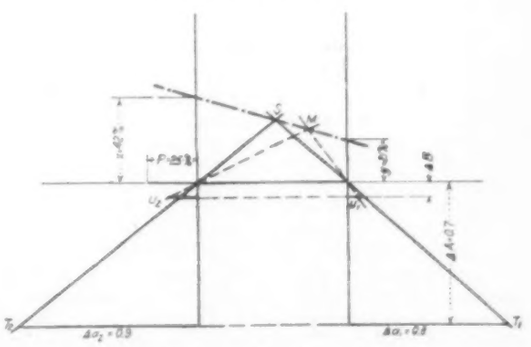


Fig. 12—Solution of a Problem with the Apparatus Shown in Fig. 11

Keeping Tabs on the Apprentice

How the Milwaukee Metal Trades Record the Progress of the Young Men of Tomorrow Through the Shops

BY H. A. FROMMELT*

THE control of a large number of apprentices in an industrial organization must be carried out as efficiently as modern methods permit. While card index systems and control boards can never take the place of close personal contact and individual supervision, yet they are essential in freeing the apprenticeship organization for the essential phase of the work, the personnel. There is some danger in attaching undue emphasis to such records so that a boy becomes just another "case" for a card index file or a control board. If properly used, however, they become a means of liberating apprenticeship administrators for the essential work for which they are intended.

A control board has been devised in Milwaukee which acts much after the fashion of production control boards. The individual apprentice's position in the shop is indicated at all times. The time as called for by the contract for each operation and department is outlined according to some convenient linear time unit. As the apprentice fulfills his obligations to his contract it is indicated, so that a visual control is established and as the apprentice approaches the fulfillment of his time for each operation it is automatically indicated. Time in addition to that called for by the contract is also immediately apparent. Thus the changing of the apprentice from one operation or one department to another can be easily accomplished.

Visible Control Board Helpful

The psychological effect of a board of this kind cannot be overlooked. To the shop organization there is no more effective means of indicating the exact size, grouping and distribution throughout the various departments. The details of such a system of control may be varied according to local circumstances and conditions but from actual experience it has been found to be far more effective than any other form of record control.

The individual record in card index form must of course be maintained. The accompanying illustration indicates the method used to make one card effective both as an application form and as a shop and school record. The form remains an application and is filed as such until the individual becomes an apprentice and has actually signed his contract.

Records of both shop and school work are essential for definite control. In order to make this completely effective the boy's parents should be advised at regular intervals of his progress. The accompanying forms show how this is done in the Falk Corporation school. The report card giving in percentages the grades of shop work, school work and conduct is sent to the parents monthly as well as attendance and punctuality. The form is printed on a standard 5 x 8 card.

The method of grading the apprentice in shop work presents considerable difficulty. Perhaps no system can be expected to give perfect results. After much experimentation it was found best in Milwaukee to interview each foreman and instructor daily regarding apprentice grades. These are not recorded directly in percentages. The apprentice begins the month with an arbitrary rating of 100. Merits and demerits then record his daily progress.

Incentives for meritorious work can be made an effective means of controlling and directing conduct of young men in their years of training. A system of awards based on receiving the highest grades as outlined above has been used with considerable effect over a period of years. The awards consist largely of tools, books and money given at the end of each year. Three such awards have been set up for each department.

Round Table Meetings

Control of apprentices while in school is quite easily accomplished. Records of work done in the class room, in this instance at the vocational school, are transmitted to the apprentice departments of the individual plants, where they are incorporated with the other records as described above. In addition to regular class room instruction it has been found effective to gather apprentices together in small groups for weekly meetings for matters of general discipline, shop morale, policy of the company and other matters more directly educational in nature are discussed. A program of shop talks is arranged in which they are given an opportunity to express opinions, air grievances and present matters relating to their welfare.

In the group system of apprenticeship, where a number of smaller plants are arranged around a larger or mother plant, the apprentice department in the latter becomes to some extent the controlling factor of apprenticeship matters in the smaller organizations. The district director assumes much of the responsibility of interchanging apprentices and similar matters. Nevertheless, the apprentice organization of the central plant becomes a clearing house for information.

An efficient district committee is a very essential step to the successful solution of an apprenticeship program. All matters common to the individual plant and the group, as well as the policy of the district, fall within its jurisdiction.

Contract Has Little Moral Value

While the apprenticeship contract is not merely a means of control, it should be discussed in this connection. Practice varies regarding the time of signing of the contract. Some insist that this should be done immediately upon the applicant's becoming an apprentice; others that the probationary period should be allowed to run its full time. In the State of Wisconsin, where the State becomes a third party to the contract, the employer, as well as the apprentice, is allowed to cancel the contract at any time and at will during the three months' probationary period. The method used makes little difference. The so-called moral effect of having a young man sign a contract immediately upon starting is of little value and is generally quite unnecessary.

The strict observance of the contract by the employer is obviously most important. The greatest value of the contract, however, lies in its medium as a sales agency. It becomes a definite schedule of shop

*Apprentice superintendent, Falk Corporation, Milwaukee.

and school work, hence a schedule or program for an industrial education which is underwritten by the employer, the boy's parents or guardian and the State. In other words, it presents something concrete to discuss and merchandise.

One of the greatest obstacles to success in industrial apprenticeship is the desire of the employer to employ apprentices without a corresponding program to present to the boy. This is largely obviated by the contract. It *necessitates* a definite program of shop and school work which must be recognized by the State, even before the first apprentice is employed. Moreover, both employer and apprentice are more conscious of their responsibilities when they have attached their signatures to an indenture.

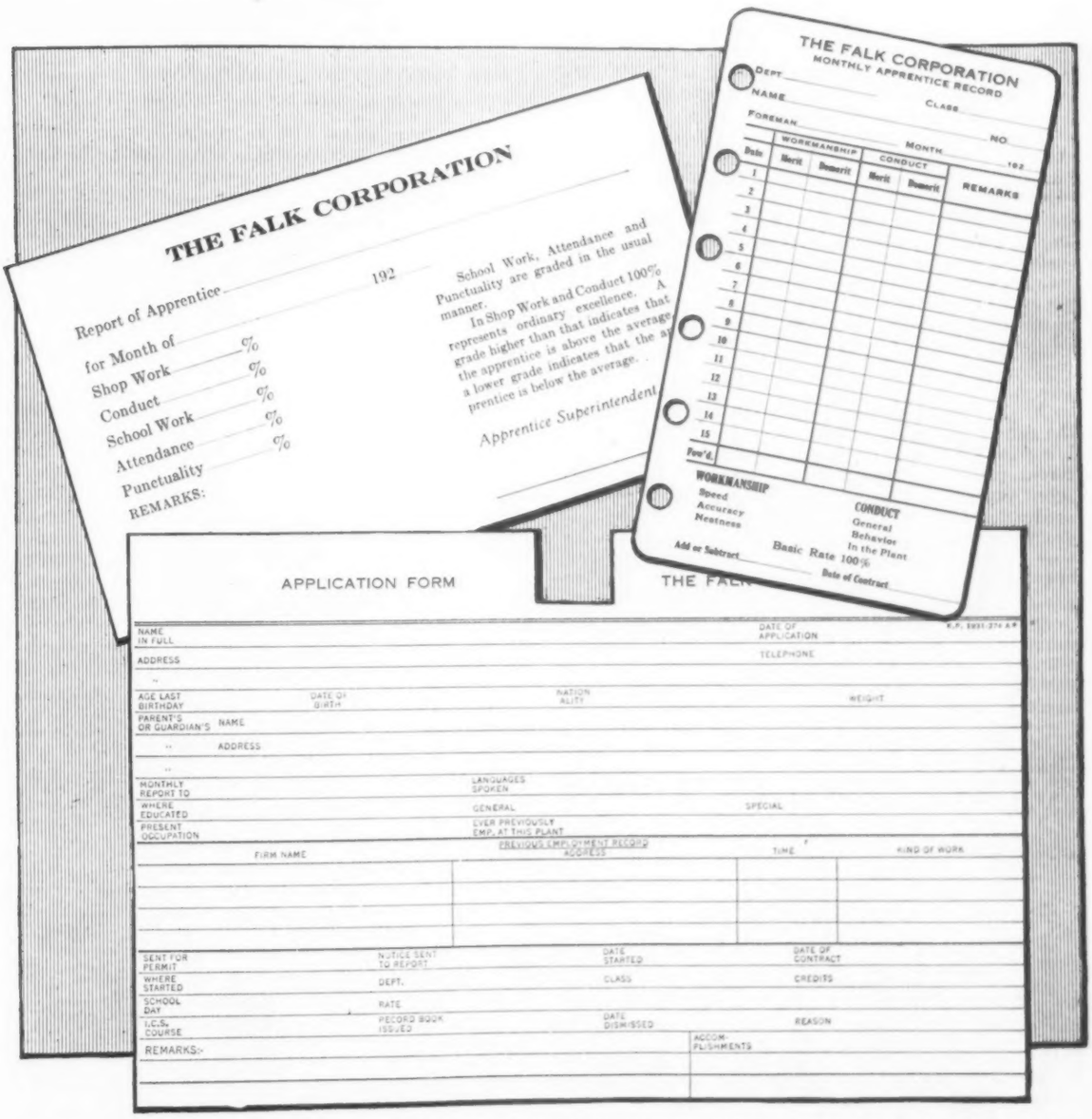
An excellent example of the advantages which accrue to industrial organizations through cooperation in apprentice training is the group of plants which are working together as described in Mr. Frommelt's interesting articles. Around the Falk Corporation as a "mother plant" has been built up a group consisting of Milwaukee Steel Foundry, Nash Motor Co., Wesley Steel Treating Co., Kinite Co., Thurner Heat Treating Co., and the Milwaukee Air Power Pump Co.

Postpones Freight Rate Changes to Texas

WASHINGTON, July 21.—Changed freight rates on iron and steel in carloads from the Birmingham territory to points in south Texas, have been ordered suspended until Aug. 12 by the Interstate Commerce Commission, pending continued hearing on these schedules.

Metal Trades Labor Barometer Dips

Employment in 790 shops reporting to the National Metal Trades Association, Peoples Gas Building, Chicago, showed a decline in June for the first time this year. These plants, located in New England, New York, New Jersey, Pennsylvania, Ohio, Indiana, Michigan, Wisconsin, Illinois, Iowa and Missouri, reported a total of 584,965 employees in June as compared with 590,210 in May, 589,372 in April, 576,533 in March, and 551,385 in February. The record for June was far better than for the same month in 1924 when 519,997 were employed.



THE Record Forms Shown Above as Used by the Falk Corporation Provide Constant, Up-to-the-Minute Information of Every Step in the Apprentice's Progress. The application form (below) is used also as a permanent record of development and constitutes a history of each individual so covered. In addition to the three forms shown here, the Falk Corporation employs a monthly merit record card, serving both as a time record for hours lost and total hours per month in attendance, but also a basis for rating in workmanship, conduct, school work, attendance and punctuality

Pig Iron Trend on Eastern Seaboard

Production in Lehigh, Susquehanna, New Jersey and Schuylkill Districts—Compared with United States

BY HOMER B. VANDERBLUE AND WILLIAM L. CRUM*

MONTHLY cyclical indexes of pig iron production and prices in the United States for the years 1901 to 1924 were presented in the first article of this series. These indexes showed that the iron industry is peculiarly sensitive to those changes in general business conditions which constitute the successive phases of the business cycle: depression, recovery, prosperity and crisis. The production figures studied were the monthly aggregate output of coke and anthracite pig iron, from October, 1901, to December, 1924.

These data were examined for evidences of a sustained tendency to growth during the whole interval and of a regular seasonal swing within each year. Both were shown to exist in the case of pig iron production. There is a steady upward drift during the period (the secular trend), and regularly recurrent month-to-month changes (the seasonal variation). Both the secular trend and seasonal variation were measured and eliminated from the data so that the remaining fluctuations, the cyclical changes in pig iron production, were disclosed in clear relief. The curve of cyclical indexes gave the story of production in the iron trade during the 24 years for which figures are available. Special insight into the relation between the cyclical movements in pig iron production and similar swings in general business was obtained, also, by tracing the comparative variation in the price of pig iron and general wholesale prices.

To Study Districts Separately

The present and succeeding articles will examine the data for production more in detail, with a view to bringing out the diversity in the fluctuations for different producing regions in the United States. THE IRON AGE has for many years given separate monthly production figures for the chief geographical groups of producers. Most of these groups are very homogeneous: they include producers located in the same general area and therefore similarly situated in respect to markets and to supplies of ore, fuel and labor. A few of the groups, however, (the Maryland-Virginia-Kentucky group, or the Minnesota-Michigan-Wisconsin-Colorado-Missouri-Utah group, for example) are not homogeneous as to production conditions, as they include furnaces widely separated from each other.

The general plan of analysis of this and the succeeding articles will consist of a study of the monthly data, 1901 to 1924, for each producing district, (or for a group of producing districts, where the grouping is for several widely distant districts). The purpose of this study will be to show the relation of each district to its neighbors and to the United States as a whole. This analysis involves taking the same steps, one by one, which were taken in the analysis for the United States as a whole. The present article considers the production records for four of the oldest producing districts of the United States. They are the New Jersey district and the three districts of Eastern Pennsylvania —the Lehigh Valley, the Schuylkill Valley, and the Lower Susquehanna and Lebanon Valleys.†

Four Districts Regarded as "Eastern Seaboard"

These four districts lie in substantially contiguous areas, and constitute a single larger unit which we have designated the Eastern Seaboard region. Strictly speaking, Maryland should be included in this region; but the bulking of Maryland production with that of Virginia and Kentucky in the reports makes such inclusion impracticable. The subsequent discussion traces the cyclical history of each of the four seaboard groups, bringing out the important differences between the groups and between each of them and the country as a whole. It presents also some consideration of the Eastern Seaboard region as a whole.

Significant data on the importance of the Eastern Seaboard region in the iron industry of the country appear in Table I. The major comparisons rest upon the average monthly production for 1902 to 1907 and 1919 to 1924. Each of these two intervals comprises roughly two complete cycles of production. In the 1919 to 1924 interval the region produced slightly over 7 per cent of the pig iron output of the United States. This figure is considerably below the proportion, roughly 10 per cent, found for the earlier interval. Thus, the share of the Eastern Seaboard region in the aggregate production declined during the 24-year period. Further light on this decline appears in the figures for percentage increase of the later interval

*Of the Harvard University Committee on Economic Research, Cambridge, Mass. This is the second of a series of articles which, in considerably greater detail of treatment and with scientific development of the statistical methods of analysis employed, are to appear later in book form. The first article appeared at page 896 of our issue for March 26.

†Of the three Eastern Pennsylvania districts it was said, in 1864, "the principal manufacture must always cling to the Lehigh, Schuylkill and lower Susquehanna valleys in Pennsylvania where the ore is abundant, the coal near at hand and the flux on the spot, where the whole land is a garden and therefore food cheap and labor plentiful and the great seaports not far off," as quoted in "Two Centuries of Iron Smelting in Pennsylvania," by Richard Peters, Jr., page 25; from Percy's "Metallurgy of Iron and Steel."

Fig. 1—Pig Iron Production in the Lehigh Valley, 1901 to 1924. The straight line indicates the trend

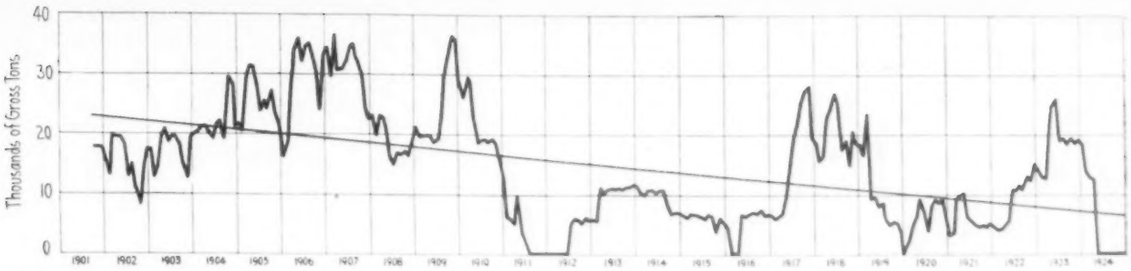


Fig. 2—Pig Iron Production in the New Jersey District, 1901 to 1924. The straight line indicates that the trend has been downward

above the earlier interval. An increase of 9 per cent for the Eastern Seaboard region must be compared with 47 per cent for the United States: the output for the region increased, to be sure, but it increased much less rapidly than that for the entire country.

Explanation for the slower rate of growth in the East than in the country as a whole rests upon a study of conditions in two of the groups of furnaces, the New Jersey district and the Susquehanna district. In each of these there was an actual decline in production from

Table I—Average Conditions in 1902 to 1907 and 1919 to 1924

	1902-1907 Average Monthly Production, Gross Tons	1902-1907 Per Cent of the United States, Total	1919-1924 Average Monthly Production, Gross Tons	1919-1924 Per Cent of the United States, Total	Per Cent Increase 1902-07 to 1919-24
United States ..	1,717,000	100	2,522,000	100	47
Eastern Seaboard	170,800	9.94	185,700	7.36	9
Lehigh	51,430	2.99	69,410	2.75	35
Susquehanna..	52,020	3.03	42,120	1.67	—19
New Jersey..	23,550	1.37	9,050	0.36	—62
Schuylkill ...	43,810	2.55	65,120	2.58	48

the earlier to the later six-year interval: the decline for Susquehanna was very slight but that for New Jersey was particularly marked. On the other hand, output in the two districts which showed increases (Lehigh and Schuylkill) did not, taken together, expand at a greater rate than in the United States: the rate for the Schuylkill district barely exceeded that for the United States, whereas the rate for the Lehigh district fell much short of the general rate. The net result for the entire region was a comparatively slow growth which marked the gradual reduction in the importance of the four districts which make up the Eastern Seaboard region.

The foregoing discussion of the percentage increase is an indirect approach to the problem of secular trend for the several districts. This method of estimating trend is scarcely adequate, however, for it obviously omits the record from 1908 to 1918, years of large importance in the industry. The measurement of trend by the method of least squares—the method used in the previous article of this series—yields the results shown in Table II.

The *central ordinate* or "central value" in each case is the normal monthly production for the middle, Jan. 1, 1913, of the 22-year period, and the *annual increment* is the normal annual increase in monthly production. The ratio of the second of these items to the first yields an appropriate measure of the average rate of increase. These results are shown in the final column of Table II. Although the exact relations are quite different, the essential conclusions to be derived from these results are in accord with the inferences drawn from Table I: while the rate of growth for the Eastern Seaboard region was considerable, it fell far short of that for the entire country; in the Susquehanna district there was a slight, and in New Jersey a heavy, actual decline; and the increases in the Lehigh and Schuylkill districts, although considerable, were at rates respectively well below and only slightly above that for the United States.

Decline of the iron industry in the New Jersey and Susquehanna districts is due to causes which are partly technical, but mainly economic. The trend of pig iron prices has been downward since the beginning of the century, whereas the richest supplies of local ore have been used up and the prices of fuel and the wages of labor have risen steadily. Meanwhile new and larger blast furnaces have been developed elsewhere, bringing lower operating costs to the newly equipped plants. The result of these conditions has been that the older furnaces have found themselves unable to compete in the market, except in a period of active prosperity when prices have been unusually high. Some new furnaces doubtless have been built, or old furnaces modernized, in the New Jersey and Susquehanna districts, but the total output of these is less than the output of the larger number of smaller furnaces during the early years of the century. One by one the older furnaces have been allowed to fall into disuse, and only the high prices of the war years made possible their repair and temporary operation.* The reason for building new furnaces in these districts has disappeared, and the industry has "migrated" to districts better located with reference to markets for raw materials and product.

*On July 1, 1903, THE IRON AGE reported 22 blast furnaces in the Susquehanna and Lebanon Valleys. The total had dropped to 17 on Jan. 1, 1915, but on Nov. 1, 1915, had increased again to 21. One furnace had dropped out by September, 1918, two more by July 1, 1923, and two more by Jan. 1, 1925, when 4 out of a total of 16 furnaces were reported in blast. Peak production occurred in September, 1918, with 18 out of 20 furnaces producing. On July 1, 1903, and Jan. 1, 1910 a total of 10 furnaces was reported for the New Jersey district; this had dropped to 7 by Sept. 1, 1911, and to 5 on Aug. 1, 1918. On Jan. 1, 1925, when all furnaces were shut down, a total of 4 was reported. Peak production occurred in December, 1909.

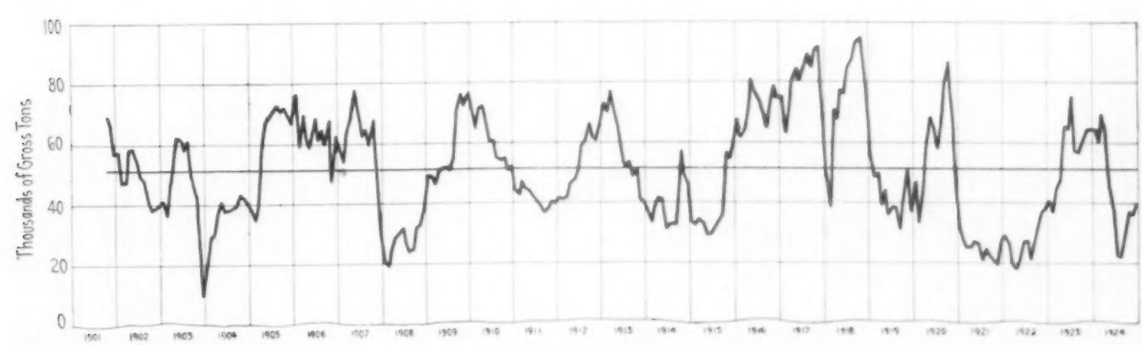


Fig. 3—Pig Iron Production in the Lower Susquehanna and Lebanon Valleys, 1901 to 1924. The trend line is level

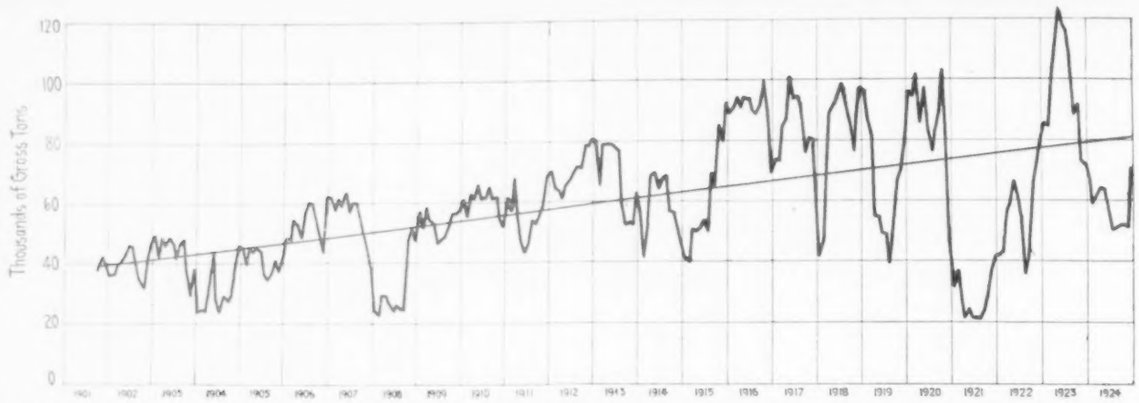


Fig. 4—Pig Iron Production in the Schuylkill Valley, 1901 to 1924. The trend line shows a consistent gain

The appropriateness of the trends for the several groups appears from Charts 1 to 4. In each case a straight line was chosen as representing the secular trend, and the only instance in which the fit of the straight line to the curve of actual data is not good is for the Lehigh district (Chart 1). In that case the chart suggests that the true trend (at least until 1921 or 1922) is curved, with its concave side downward. This condition results from the unusually great expansion of output in this district during the World War and the subsequent failure of production to return in 1923 to war-time levels, as it did in the other districts. A curved trend was not used in the actual analysis, partly because there appears no reason to expect that further decline in the immediate future which the use of such curve would imply, and partly because the use of the straight line facilitates the comparison with the records for other districts. At some later time, when data are available for a longer post-war period, it should be possible to calculate a true trend for the Lehigh district.

Indexes of seasonal variation were found for each district by the usual method. Although the seasonal movements for the four districts are not identical in form or extent, a discussion of their differences from one another and from that for the United States is not essential for the following interpretation of cyclical fluctuations.*

A study of the cyclical history of the four Eastern Seaboard districts is the chief object of this article, and such study rests upon Charts 5 to 8. Each of these charts compares the curve of cyclical indexes ("adjusted relatives") for a particular district with the similar curve for the United States. The cyclical indexes are obtained from the actual monthly production data, by correcting for trend and seasonal variation.

The vertical scales in Charts 5 to 8 are identical for all curves, except that the New Jersey scale (Chart 6) was compressed, to offset the exceptional amplitude of fluctuation in that district. If this exception is borne in mind, direct comparison with the United States curve can be made on each chart. When the cyclical indexes for the four districts are examined in detail, it is seen that the production in each has responded to the same general influences (and at about the same time) as has the industry for the whole country. The heavy lines tracing the district indexes, and the dotted line tracing the United States index, move up and down in general sympathy. The extraordinary prosperity due to the war production beginning (except for New Jersey) late in 1915 and continuing to the end of 1918 stands out in clear relief on all four charts; so do the post-war boom of 1920, the deep depression of 1921, the record production of 1923 and the curtailment and quick recovery in 1924. The pre-war swings from prosperity into depression, and back to prosperity once more, are shown also: prosperity in 1903, 1906 and 1907, 1910 and 1912 and 1913; depression in 1904, 1908, 1911 (except for the Lehigh district) and 1914, when the industry was paralyzed by the outbreak of war.

Table II—The Secular Trends for the Interval 1902-1923

	Central Value, Gross Tons	Annual Increment, Gross Tons	Average Per Cent Increase
United States.....	2,249,300	66,060	2.94
Eastern Seaboard..	195,240	2,532	1.30
Lehigh	69,908	1,430	2.05
Susquehanna	50,991	—26.8	—0.052
New Jersey.....	14,946	—711	—4.76
Schuylkill	59,398	1,840	3.05

Failure of the Lehigh district to move with the industry as a whole in 1909 to 1911 is due to the carrying through of a considerable reorganization and expansion program by the Bethlehem Steel Corporation, the most important enterprise operating in that district. During this short period, the growth of this company served to overcome the depressing influences

(*Continued on page 257*)

*Further attention will be given to the seasonal movement for each group in a subsequent article, and the detailed comparison of trends in the several groups, also, is reserved until a later date.

Fig. 5—Cycles of Production in the Lehigh Valley (full line) Compared with Cycles for the United States (dotted). Both are expressed as a percentage of normal production volume

British Rolling Mill Practice

Progress Traced in the Best-Equipped Plants—Scrapping Obsolete Plant Essential for World Competition

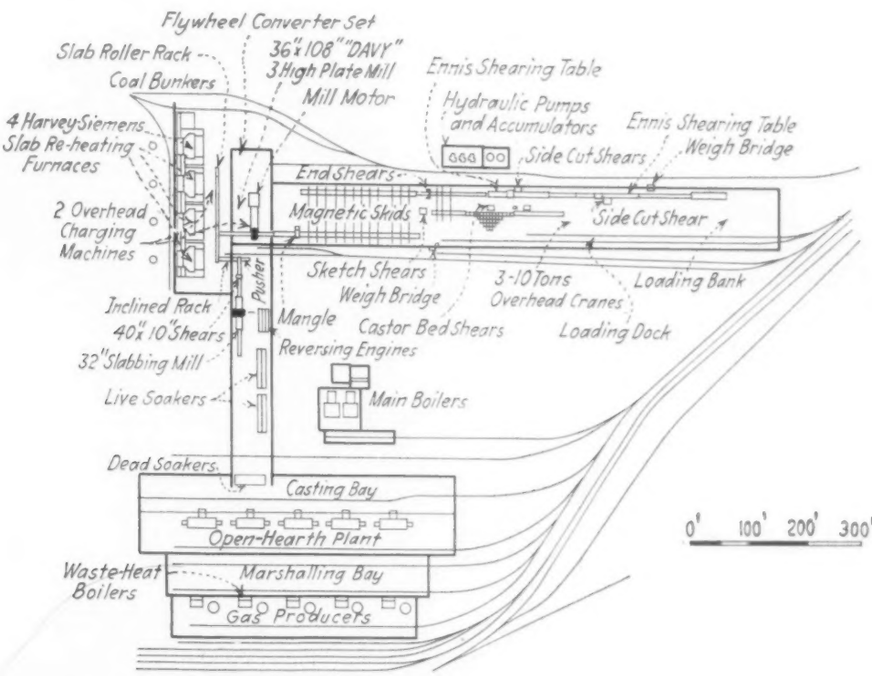
BY THOMAS W. HAND*

ADMITTEDLY, ideal conditions can scarcely be realized in certain steelworks of this country, where the plant installed by early pioneers has been limited in development through site conditions or financial disability, and remodeling has consequently been permanently handicapped. Further, some temporary advantage as regards low overhead charges can at times be claimed for continuing to work an old plant, which has, in course of time, been written down to a merely nominal capital value.

Making due allowance for these important considerations, however, one feels forced to the conclusion that William Garrett's criticisms of 24 years ago, while perhaps severe, were in the main justified. He attempted to show where, and to what extent, British rolling mill practice fell short of requirements essential to industrial success. And no serious attempt appears to have been made during the next 15 years to keep pace with the class of mill machinery then being installed by rival nations.

It is difficult to find any adequate explanation of this policy, as obviously keen competition can be met only by improved methods. Possibly more complete recognition of the limitations of human endurance and will might have resulted in fuller development of mechanical means, and created thereby a higher standard of output. This latter is the all-important factor and, if the reasoning now generally accepted in America be admitted, that the investment cost per unit of annual production is approximately equal for all classes of mill machinery, it follows that the largest producing plant is the best investment, as the necessary replacement of arduous manual effort by mechanical devices results in indisputably lower operation cost. This aspect will be apparent from inspection of the particulars of operating strength given later in connection with mills of this class.

Here follow descriptions of many American mills, and contrasts between British and American practice. He lists seven notable "cogging" mills installed in Great Britain in the past ten years, with rolls 36 to 42 in. diameter and 7 to 10 ft. long. Three of these were for plate mills, one for a Morgan billet mill, one for a rail and beam mill and two for general work. Four of these mills are driven by reversing electric motors and three by reversing steam engines. All are two-high mills.



New Plate Mill Plant at the Clydebridge Steel Works of David Colville & Sons, Ltd., Showing Coordination of Equipment from Open-Hearth Furnace to Sheared Plate

Considerable space was given to descriptions of several types of manipulator.

Concentration of Production vs. Freight Rates

Commenting on certain American mills, he said:

In a recent report the author in informed that the Gary plant is producing about 28,000 tons of structural material and rails per month. The blooming mill unit is said to have established a month's record of 77,000 tons from 22 x 24-in., 25 x 28-in., and 25 x 36-in. ingots. Further, this mill has rolled 44 ingots of the latter size, representing 350 tons of steel, in one hour into 6-in. slabs.

Most of the rail mills in America were developed

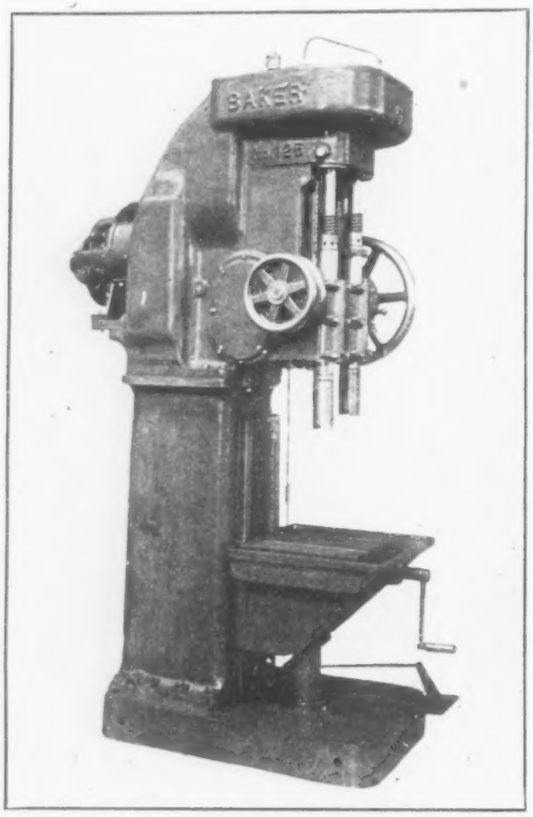
(*Continued on page* 254)

*Mechanical engineer, Sheffield, England. This is a brief abstract of his paper, delivered in May, before the Iron and Steel Institute, London.

Single-Purpose Double-Spindle Drilling and Boring Machine

A double-spindle drilling and boring machine of rugged design, with self-contained motor drive and intended for use in the quantity production of duplicate parts has been placed on the market by Baker Brothers, Inc., Toledo, Ohio.

Equipped with a plain table the machine may be used on such parts as connecting rods, brackets, etc., and with a circular indexing table, for rough and finish



With Plain Table the Machine May Be Used on Connecting Rods, Brackets and Similar Parts. With a circular indexing table, rough and finish boring, drilling and reaming and other consecutive operations may be done

boring, drilling and reaming and other consecutive operations. The spindle of the machine can be adapted for driving multiple heads, and be provided with a depth stop for accurate facing work. Other attachments are available also. The machine has capacity for 1¾ in. high-speed drills in steel, both spindles.

The drive from the motor is by means of gears which are of alloy steel and hardened. Being essentially a production unit one speed and one speed are furnished for each machine. The crown gears on the spindles may be removed conveniently and the speed of either spindle changed independently of the other. The speed for each spindle may be different to provide for a different diameter of tool or to take care of the proper ratio of speed between the drilling and reaming operation or a roughing and finishing operation. The ratio of drive from the motor may also be changed, thus changing the speed of both spindles. Slip gears are provided for the feed train, which in combination with single, double or triple lead worm gears, give a range of feeds.

The spindles are of forged high carbon steel and are fitted with special chrome-steel thrust races. They are slotted across the end for driving heavy boring and facing tools, fitted with a cross drift for holding heavy tools, and also are equipped with hollow set screws to prevent dropping out of light tools. The spindle has a minimum diameter of 1¼ in. and is bored to fit a No. 4 Morse taper.

Controls are located conveniently. The feed is engaged by foot treadle and disengaged by means of an adjustable trip on the quill, the spindles returning, after the feed has been disengaged, by means of a counterweight. A counterweight is provided for each spindle, which permits of independent adjustment for depth. The gearing is lubricated by a pressure system, the amount of oil in the reservoir being shown by a glass indicator at the front of the machine and the rate of flow being shown by a gage at the front and top of the machine.

The maximum distance from the center of the spindle to the plain table is 29 in., this being increased when necessary by spacing blocks. The vertical adjustment of the table is 18 in. The length of the spindle sleeve is 11 in., and the diameter 3 in. The base dimensions of the machine are 25 in. by 36 in. and the weight, with plain table and 7½-hp. motor, is 4200 lb. Multiple heads made special to particular requirements can be furnished. They are attached by means of the company's patented flange quill construction, which consists of a flange cast upon the spindle sleeve to which the head is bolted.

Combination Shear, Rod Cutter and Punch

A hand-operated combination shear, rod cutter and punch, designated as the No. 3, has been added to the line of the Bench Machine Tool Co., 220 North Thirteenth St., Philadelphia, being offered for general utility use in machine, sheet metal and other shops, and for cutting core rods in the foundry.

The machine is usually furnished for mounting on a low bench, but a stand may be provided, as well as a truck for portable use. The cam action and leverage is said to provide ease of operation up to the full capacity of the machine, only one pull of the handle being required to make a cut or punch a hole. The movement of the handle is always in the same direction for any operation. The dies for the bar stock are interchangeable, providing for cutting round, square, hexagon, octagon and material of other cross section. Angles and channels may also be cut by this method. The cut ends of the material are said to be clean and square without burrs or turned edges. The rod cutter dies and shear blades are of alloy tool steel, hardened

The Punch and Shear Are at the Front. The bar stock cutters are interchangeable

and ground, and all studs and other steel parts are hardened. The frame is of heavy construction.

The capacity is for cutting 5/16 in. by 2½ in. flats, ⅝ in. squares or rounds, and for punching ⅜-in. holes in 3/16-in. steel plate. The throat of the punch is 2 in. deep. A length gage is provided for duplicate cutting.

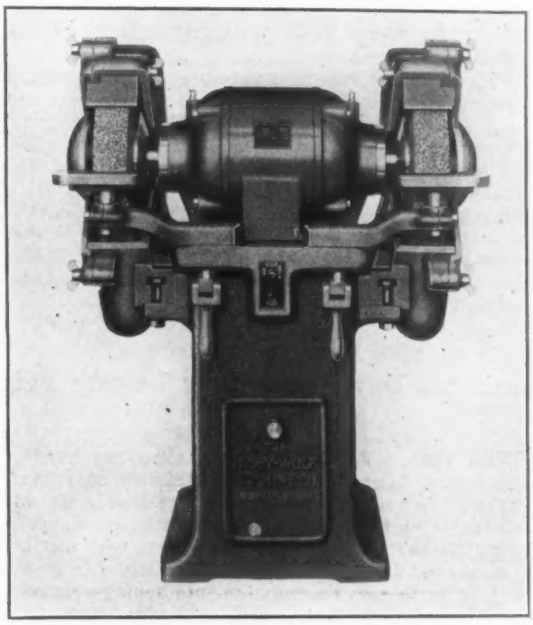
The charcoal iron blast furnace of the Michigan Iron & Chemical Co., Jordan, Mich., is about to blow out.

Grinder for Production or Utility Work

The Hisey-Wolf Machine Co., Cincinnati, has added to its line the 5-hp. heavy-duty grinder here illustrated, which is adapted either for production or general utility work. The grinding wheels are 18 in. in diameter, 3-in. face.

Ball bearings are employed throughout and are inclosed to prevent the entrance of grit and dirt. Each bearing is provided with an oil chamber, which holds a large supply, and a drain plug at the bottom of each chamber permits of convenient flushing and renewal of oil.

An automatic motor starter, claimed to provide maximum protection from overload, is standard equipment. The operating push button control is at the front of the machine, the switch proper being inclosed in the base, where it is fully protected, but accessible through the door at the front. Two safety combination adjustable wheel guards are provided and a spark and chip breaker fitted to the top of the wheel guards is a feature. These are intended to prevent the sparks from flying in all directions.



A Full Automatic Motor Starter Provides Protection from Overload

The spindle, of one-piece construction, is 2½ in. in diameter in the center. The wheels are fitted directly on the spindles and flange washers of liberal size and machined all over are used. Inner flanges are keyed to the spindle, but may be removed by hand. The grinding rests are adjustable and may be removed if desired. The motor is said to withstand a momentary overload up to 10 hp., a 50 per cent overload for one hour and a 25 per cent overload for longer periods.

The distance between wheel centers is 28 in. and the height from the floor to the center of the spindle is 36 in. The net weight is 1100 lb.

New Standard Samples

The Bureau of Standards is now issuing new standard samples of manganese metal No. 67 and ferromanganese No. 68 with provisional certificates. The manganese metal contains 97.2 per cent manganese, 0.06 per cent carbon, 1.50 per cent iron and small amounts of vanadium, chromium and other metals. The ferromanganese contains 80.70 per cent manganese, 6.85 per cent carbon and small amounts of other metals. The price of each sample is $2.50 per 100 grams, prepaid or parcel post C. O. D.

Renewals No. 12c B. O. H. 0.40 carbon steel, No. 15b B. O. H. 0.10 carbon and No. 5c cast iron are ready for distribution. The price of the steels is $2 and that of the iron $2.50 per 150 grams.

Oeking Punching and Shearing Machine

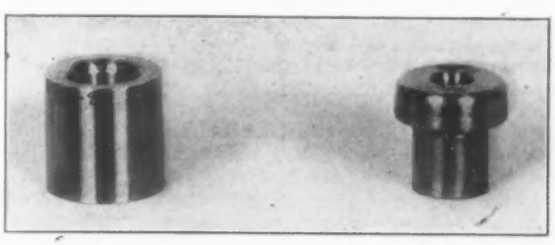
Julius Blum & Co., 532 West Twenty-second Street, New York, have been appointed American sales agents for the triple combination steel frame punching and shearing machine manufactured by the steel works Oeking, Dusseldorf, Germany. The machine, which was described in THE IRON AGE of April 13, 1922, has been improved in some details. The plate shear has longer knives than in the previous models, the No. 16 machine having a 13-in. knife and the No. 20, a 16-in. knife, as compared to the former lengths of 9 and 11 in. respectively. As in the previous model, the punch is arranged for punching both webs and flanges of structural shapes, and the machine is designed to accommodate broad-flanged Bethlehem shapes. The punch is provided with a lowering device to locate the center mark before punching, and both hand and foot levers are provided for throwing the machine into gear. The bar and angle cutter can be arranged to cut various structural shapes, but the standard equipment provides only for cutting of rounds, squares, angles and tees. The knives may be changed conveniently for cutting beams and channels.

The smallest machine, the No. 13, will split 9/16-in. plates, cut 3½ in. angles, and punch a ⅞-in. hole through ½-in. material. The largest machine, the No. 32, will split 1⅜-in. plates, cut 8-in. angles and punch a 1¾-in. hole through 1¼-in. material.

Adds to Line of Drill Jig Bushings

A plain headless press fit bushing stocked in all numbers, letters and fractional drill sizes by sixty-fourths from 1 to 1¼ in. and in fractional sizes by thirty-seconds from 1¼ in. up to and including 2 in., is a recent addition to the line of standard drill jig bushings offered by the Ex-Cell-O Tool & Mfg. Co., 1471 East Grand Boulevard, Detroit.

A choice of three lengths is offered in each of the above sizes, which are grouped so that there are only eight outside diameters in the entire series. The outside diameters are so arranged that the jig plate may be bored to a standard plug gage, grinding stock to the amount of 0.020 in. being left on the outside. These bushings are of tool steel, heat treated to file hardness. Another addition to the line is a bushing with plain head, as illustrated, these being similar to the headless design with 0.020 in. grinding stock on the outside diameter for fitting. The same sizes are furnished and there is also a choice of three lengths.



Standard Drill Jig Bushings. Grinding stock is left on the O.D. for fitting

A booklet on the "Regrinding of Machine Knives" by T. Giles, Simonds Saw & Steel Co., Lockport, N. Y., and C. A. Runo, Norton Co., Worcester, Mass., published recently by the Norton Co., covers operations in the regrinding of machine knives on which there is a difference of opinion and where practices vary considerably in different localities. Data are given on the selection of grinding wheels, method of dressing, wheel speeds, rate of feed and speed of traverse, and on the use of coolant.

Sickness Insurance Common Abroad

But Europe Is Far Behind America in Safeguarding the Workers' Health and Welfare

"INDUSTRIAL health work in the factories of Europe has not reached the advanced stage of development that it has attained in the United States. Hundreds of American plants have physicians who devote their entire time and effort to the medical supervision of the workers. In contrast to this, it is doubtful if there are more than twenty-five factories in all of England and perhaps one or two in Belgium that employ full-time medical men."

DR. OTTO P. GEIER

Such is the statement made by Dr. Otto P. Geier, director of the employees service department of the Cincinnati Milling Machine Co., who has just returned home from a study of European factory conditions made by him as a member of an Industrial Health Commission of the League of Nations. Eight weeks were consumed in visiting industrial plants in England, France, Scotland, Belgium, Holland and Switzerland, studying industrial diseases, working and living conditions, and plant safety.

In discussing conditions in Europe with a representative of THE IRON AGE, Dr. Geier said:

"As a rule, European industrial plants are of the older type, and are not built along modern lines with an abundance of natural light. Buildings of the sawtooth type construction are relatively rare. There are some individual examples of wonderful plants, but these are the exception rather than the rule. Europeans have been slow not only to build plants with adequate natural lighting, but also to provide the best artificial lighting for their workmen. There is not sufficient guarding against eye-strain, which subject is receiving considerable attention in all modern plants in this country. Inferior illumination, making for eye-fatigue, predominates in hotels, office buildings and other structures as well as in industrial concerns.

"Government or state inspection and supervision of industry in European countries is better organized than ours. Manufacturers are perhaps better informed concerning governmental requirements than in this country. However, the governments only specify certain minimum requirements which executives go to reasonable lengths to fulfill, but few go farther.

"The main reason manufacturers are unwilling to extend their industrial health work is that capital and labor throughout Europe have no comprehension of team work. The laboring classes have a traditional antagonism to capital and little cooperation exists between these groups in promoting industrial health programs.

"On the other hand, sickness insurance is more widely appreciated in Europe than in America. The necessity of spreading the cost of illness among many people is recognized. In some states the money for this purpose is partly contributed by industrial concerns and partly by the state, the amount of benefits being in many instances determined by the number of children in the family of the stricken worker. England has solved the problem of sickness insurance by placing it on a governmental basis, and France is preparing to follow England's example, but Belgium, Holland and Switzerland appear to prefer to leave the subject to the private initiative of groups, societies and industrial organizations, with the encouragement and assistance of the state.

"Despite the attention turned to the relief of the sick by means of insurance, less intensive preventive work against sickness is done than in the United States. Our comprehension of hygiene, sanitation and cleanliness is superior to that of Europeans. All these comparisons are made, however, with the reservation that I am not familiar with the industrial conditions in our southern states.

"The laxity in industrial safety and health work in European countries may be partly due to the fact that life is cheap and easy to replace. The applicants for jobs are legion and the number of positions few. This results in a high percentage of rejections. In this country less than five per cent of the men physically examined at time of employment are rejected on this basis, and we think this is too high, but there is such an abundance of labor to choose from in Europe that rejections for physical and other reasons sometimes total fifty per cent."

American Day Planned for Leipzig Fair This Fall

NEW YORK, July 21.—For more than two hundred years before Columbus discovered America, merchants from all the countries of Europe, western Asia and northern Africa met every six months at Leipzig, Saxony, to barter. Now the authorities who conduct the semi-annual fair at Leipzig—a fair that has grown considerably in size through the intervening centuries—have rediscovered America. For the first time, they will have an "American Day" at the next fair, which is scheduled to begin on Aug. 30. The main fair continues till Sept. 5; the technical section, till Sept. 9. American Day will fall on Sept. 3. The American Ambassador will be the guest of honor.

This information has just been received from Dr. Raimund Koehler, chairman of the board of directors of the fair organization, by the American Leipzig Fair Association, Woolworth Building, New York. The association is engaged in sounding our business men on the expediency of establishing a permanent American selling and buying center at Leipzig. More than 180,000 buyers from 40 different countries registered at the spring fair, where their wants were catered to by 13,970 sellers from 18 countries. The buyers from the United States numbered 800.

Gain in Implement Exports

American exports of agricultural implements during the 11 months ended May, 1925, amounted to $57,344,503, as compared with $56,182,801 for the period ended May, 1924, according to the Agricultural Implement Division of the Department of Commerce. Wheel tractors comprised the largest item; 27,812, valued at $15,490,728, were exported. Plows are the second, and harvesters and binders are the third largest items.

Keeping a geographical record of equipment installations has been applied in a novel way by the Dorr Co., engineer, New York, which has had built a globe 4 ft. in diameter and made to revolve by a small motor. Regions where the company's equipment is used are represented by different colored pins. The globe was one of the features of the recent chemical equipment exposition in Providence, R. I.

Favorable Business Factors Predominate

Commodity Prices Moving Upward, Retail Trade 13 Per Cent Above Last Year, Agricultural Outlook Excellent

BY DR. LEWIS H. HANEY
DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Favorable Factors

1. The P-V line moves up again
2. General trend of commodity prices upward
3. Production curtailed where excessive
4. Agricultural situation strong; good crops at good prices
5. Retail trade active and about 13 per cent over last year
6. Building continues at high level
7. New business enterprises increase
8. Outlook for depressed industries improves—farm implements, fertilizers, leather, copper, textiles
9. Political conditions favorable

Unfavorable Factors

1. Unfilled steel orders small and declining
2. Stocks of commodities in first-hands still large
3. Exports decreasing, while imports hold up
4. Bank debits decrease
5. Failures (after seasonal adjustment) increase
6. Nervous, uncertain money market
7. Possible labor disturbances (coal, railways and textiles)
8. Foreign conditions disturbing (England, Mexico, China) and German reparations loom as a problem.

THE 1925 spring recession in business and industry has, after all, been relatively small. The two indexes portrayed in Fig. 1, while clearly showing the irregularity and decline which have occurred, demonstrate that the downswing has been minor.

The best index of physical volume of trade is railroad tonnage. In June the number of tons hauled by United States railroads increased over 6 per cent in comparison with May. This is about the usual gain which occurs in June and, when allowance is made for that fact, the tonnage curve remained practically unchanged.

The tonnage curve, however, is still above the line of long-time trend and is 16 per cent greater than in June, 1924. The decreases of recent months ceased in June, indicating the arrival of stability, temporarily at least.

The volume of bank debits, including New York City, fell off somewhat in June. The weekly average was almost exactly the same as in May, running around 11.7 billion dollars. Usually, however, there is a gain in June, and, as this gain failed to materialize, the adjusted index shown in Fig. 1 registers a decline. The June index of bank debits was 143 per cent of the 1921 average and was 16 per cent over June last year.

In this connection, however, it should be noted that prices are now about 10 per cent higher than a year

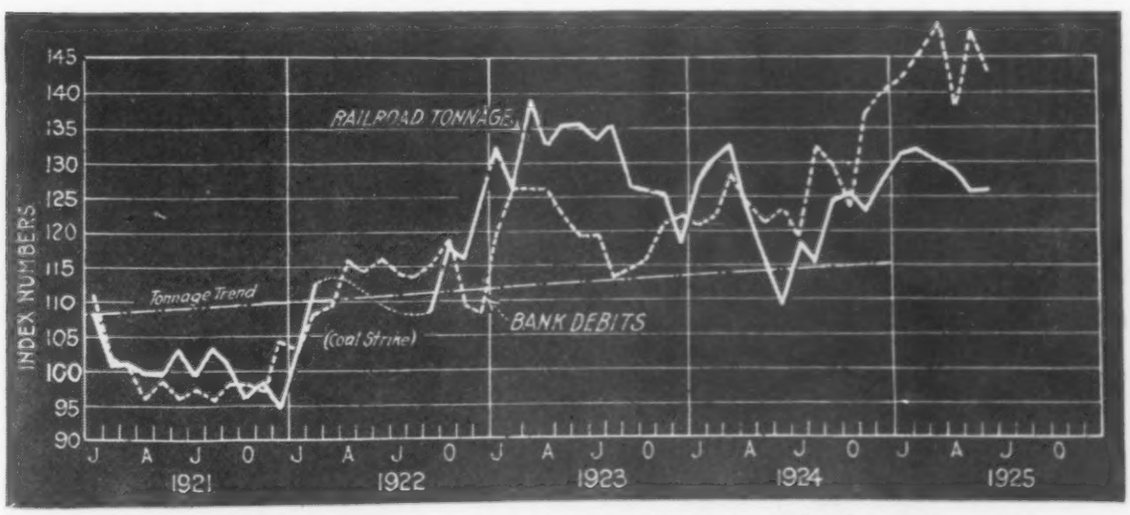


Fig. 1—Bank Debits, Though Declining, Are Still So High in Comparison With Recent Years That a Good Volume of Commercial Transactions Is Indicated

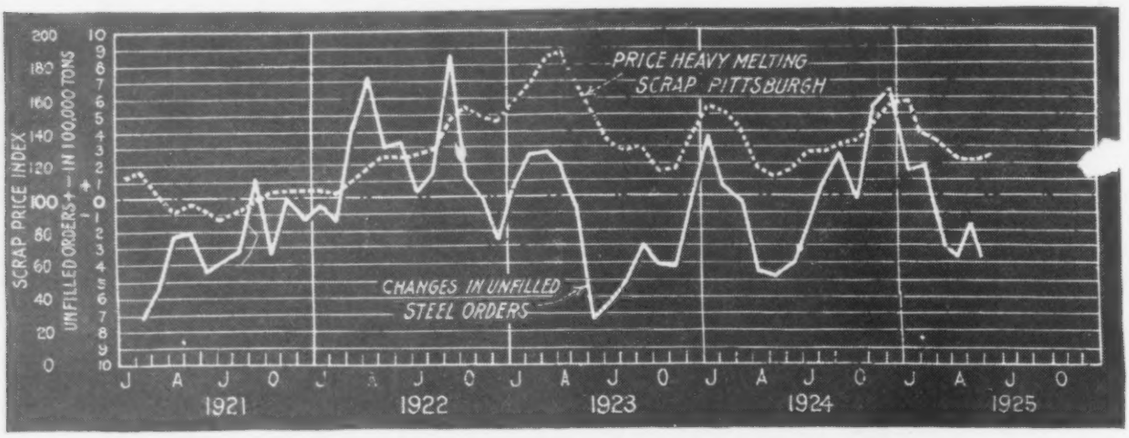


Fig. 2—Hand-to-Mouth Buying Has Undoubtedly Affected the Unfilled Order Situation, so that a Small Volume Now Represents a Relatively Better Tone to the Market than Formerly

ago and part of the gain in bank debits is due to the higher prices rather than to increased physical volume.

On the basis of Fig. 1 it may be concluded that the recession in industry which occurred between February and May was checked in June. The present level of business and industry is something like 15 per cent higher than a year ago. Even making allowance for the normal growth required to meet the expansion of population and consumption, the level is over 10 per cent higher. Of course it must be remembered that in June, 1924, business was at the bottom of the decline which followed the 1923 peak. As the end of the current minor recession is now near, however, it is worth while noting that we are still so far above the 1924 bottom.

Signs of Approaching Upturn

ONE of the most important statistical items presented in this service is the curve showing changes in unfilled orders (see Fig. 2). This curve failed to give a favorable forecast on the basis of June data. The unfilled orders of the United States Steel Corporation showed a greater decrease than usual for the season and the downturn in the curve cancelled the May upturn.

The most that can be said is that the index is clearly near bottom levels and that the recent irregularity may be best interpreted as indicating the end of the decline.

The second curve in Fig. 2 is the monthly index of the price of heavy melting steel scrap in the Pittsburgh market. The June average showed a gain over May and thus far during July the gain has been held.

The conclusion to be drawn from the two barometers is that the iron and steel industry is near the turning point and that improvement is probably near in industry in general. As yet, however, the only conclusive evidence is to the effect that the decline has ended and that we are in the midst of a period of temporary stability.

Industry and Trade on a Stable Basis

PRODUCTION in basic industries as recorded by the Federal Reserve Board shows clearly the considerable slump from the February peak (see Fig. 3). The decline in May, however, was less marked than in preceding months and present indications are that little further decline will be shown by the figures for June and July.

The curve of wholesale trade shows that that branch of business has been well sustained at a remarkably stable level, which is considerably higher than the four-year average.

Retail trade, in spite of the fact that an allowance for long time trend has been eliminated, shows a general gain throughout the whole period covered. Although there has been a general decline since January,

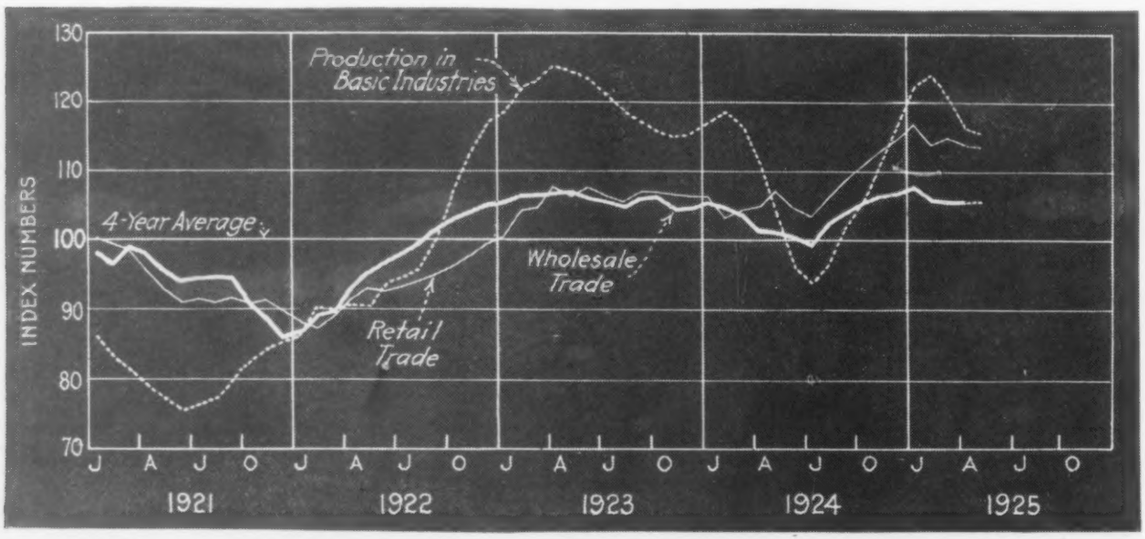


Fig. 3—Production in Basic Industries Is About 15 Per Cent Above the Four Year Average. Retail Trade Is Almost as Much Above the Average Line, Indicating a Normal Balance of Production and Consumption

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Fall business outlook encouraging.—Large crops at good prices, labor well employed, retail trade 13 per cent above 1924, prices advancing.—Page 217.

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Pig iron production in New Jersey and Susquehanna districts "marginal."—Richest ore becoming exhausted, while wages and fuel costs rise; profits only possible when iron prices are high.—Page 210.

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Cupola and open-hearth mixtures can be scientifically calculated.—In short time, with aid of graphic device described on Page 205.

Though exports are small part of iron and steel production, they play important part in price situation.—Consequently imports and exports merit close watch.—Page 223.

Little known facts and figures concerning continuous rolling of bars.—Details of operations of 8 in. mill at Donner Steel Co.—Page 201.

Fabricated plate bookings in June largest this year.—First half year bookings well above corresponding period in 1924.—Page 228.

Formal contract with apprentices of no moral value.—But well-defined study program and clear records of progress are essential.—Page 208.

Belgian steel strike helps Continental producers.—75,000 men out, production curtailed, but demand is still dull and prices weak.—Page 230.

Three men control three-high plate mill unit in Scotland.—From reheating furnace to mangle every movement controlled by one roller and two pulpit operators.—Page 213.

British rolling mills in sore need of modern equipment.—50 year old machinery will not enable manufacturers to compete with other countries.—Page 254.

Employment in 790 metal trade shops shows decline in June.—For the first time this year National Metal Trades Association reports drop.—Page 209.

Sickness insurance supported by employers in Europe.—But Europe is far behind America in safeguarding workers' health and welfare.—Page 216.

New high record for automobile production in first half year.—With average weight per car of one gross ton, steel consumption may easily be overestimated.—Page 224.

Steel castings coming into favor for locomotive axle boxes.—New type box has brass cast in the box which is a steel casting.—Page 227.

Many sound reasons for being optimistic regarding business future.—Merchant gives dozen factors which point to long continued prosperity.—Page 224.

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The Iron Age and Its Readers

NOT always is a description of an engineering enterprise replete with design as well as performance data. On this account and because of the paucity of the literature on rolling mill practice, the article in this issue on the 8-in. merchant bar mill of the Donner Steel Co. is a contribution of unusual importance. On page 204 will be found the listed details of the successive reductions of metal in the passage from the heating furnace to the hot bed; but the information is notable chiefly because it concerns the performance in part of a continuous mill, on which little has appeared in print. A plan diagram on page 202 gives dimension data to be used in connection with the tabulated story of the passes. For all of this THE IRON AGE and its readers have to thank F. R. Huston, vice-president of the Donner Steel Co., and F. G. Gasche, its consulting engineer, for their ready compliance with the request to publish facts about one of the country's speedy light-bar rolling mills.

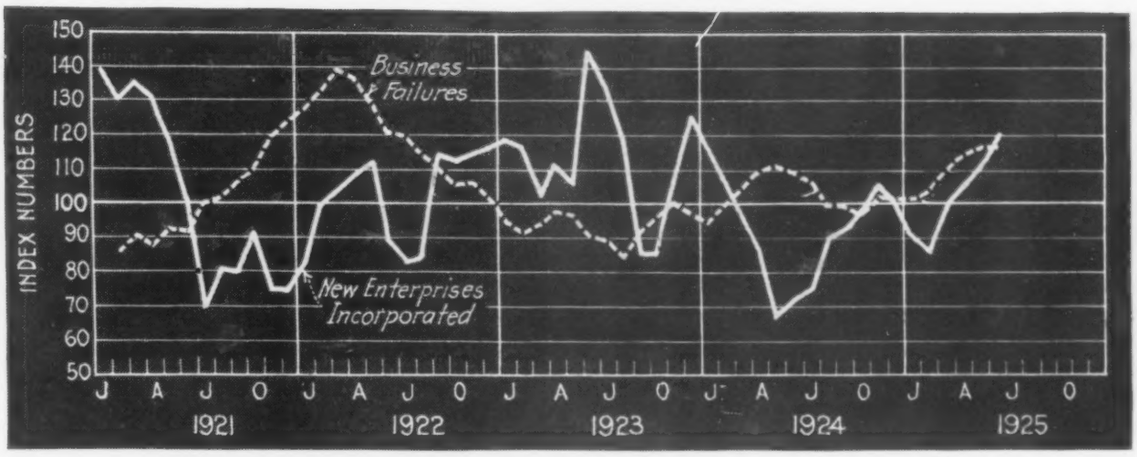

Fig. 4—Since February the Number of New Business Enterprises Has Increased Steadily Until Last Month When More New Concerns Were Started Than in Any Month Last Year

the index is much above the four-year average and is also considerably higher than the index of wholesale trade.

The chief interest in Fig. 3 attaches to the relation among the three stages of industry and trade which are there shown. While it is impossible to say that the levels of the curves are strictly comparable, it is believed that they are fairly so. On this assumption the following conclusions may be drawn:

1. *Production in basic industries is still somewhat excessive in comparison with the volume of trade. This condition is being corrected and such correction constitutes one of the most favorable indications at the present time.*

2. *Retail trade is relatively more active than wholesale trade. This is an important element of strength in the present business situation. While the relative magnitude of retail trade is perhaps partly due to the greater extent of direct distribution through chain stores, it indicates in part that there has been no overbuying by retailers. The situation at present therefore differs decidedly from that which existed in the early months of* 1923 *and* 1924 (see Fig. 3).

Business Birth Rate Up

THE capitalization of new business enterprises during June was large and the curve shown in Fig. 4 has resumed an upward trend. The new enterprise curve is now up to the level of January, 1924.

Business failures in June were more numerous than usual for the season. After making allowance for the usual trend of failures between May and June, the adjusted curve shown in Fig. 4 moved upward. While the failures curve is now tapering off somewhat it still indicates that business mortality is abnormally high.

Failures are likely to increase following a recession in business, and the recent rise of the failure curve is probably not so significant as is the gain in new enterprises which is often highly barometric. The latter indicates growing optimism among business men. Moreover, the new enterprise curve has now crossed the failure curve on the upswing, a condition which often arises in a period of improving business.

Building Activity Reassuring

FLOOR space in contracts awarded, as reported by the F. W. Dodge Corporation, has shown remarkable stability in recent months. After eliminating the merely seasonal changes, the curve of building activity has been practically stable since January. Building has been better sustained in the early summer months this year than usual.

The interest rate as reflected in the market for best commercial paper showed a moderate down-swing during the months of May and June. Though money rates are undoubtedly stronger than they were last fall and winter, it is fair to say that money is still cheap, especially when considered without regard to other financial conditions. When compared with the yield of high grade bonds, however, short time money rates do not seem quite so low. It is believed that this fact is partly responsible for the failure of the stock market averages to do much more than mark time recently.

The sustained building activity is supporting the demand for steel and other building materials and at the same time helping to maintain employment. As no sharp decline in building is yet in sight, this is one of the favorable factors.

Money is rather easy and will probably continue so for at least another month. No advance is yet in sight which would be sufficient to hamper business. Higher rates are likely to develop by September at the latest, the amount of the increase depending upon the degree of business expansion and the advance in commodity prices.

Moderate Improvement in Sight

BUSINESS is still in the stage of liquidation. Price gains are mainly based on curtailment—not on forward buying.

This condition usually precedes recovery and improvement. It is believed that this year will be no exception to the general rule.

No very sharp business expansion, however, is yet in sight and there is little probability that it will develop. Any improvement will start *without* the backlog of scarcity of manufactured goods. Liquidation has been far from drastic and stocks of most basic commodities are abundant. It would, therefore, be easy for the industrial machinery to go ahead too fast.

Furthermore, the current yield on investment is very low and any great expansion in industrial output under the circumstances would soon cause credit strain and bring about a major decline.

Caution and restraint are, therefore, desirable, so that business may be stabilized and be maintained on a satisfactory basis indefinitely.

ESTABLISHED 1855

THE IRON AGE

A. I. FINDLEY, *Editor* W. W. MACON, *Managing Editor*

Member of the Audit Bureau of Circulations and of Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York

C. S. BAUR, *General Advertising Manager*

F. J. Frank, *President* George H. Griffiths, *Secretary*

Owned by the United Publishers Corporation, 239 West 39th Street, New York. Charles G. Phillips, *Pres.* A. C. Pearson, *Vice-Pres.* F. J. Frank, *Treas.* H. J. Redfield, *Secy.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1402 Widener Building. Cleveland: Guardian Building. Detroit: 7338 Woodward Ave. Cincinnati: First National Bank Bldg. Buffalo: 833 Ellicott Square. Washington: 536 Investment Building. San Francisco: 320 Market St. London, Eng.: 11 Haymarket S.W.1.

Subscription Price. United States and Possessions, Mexico, Cuba, $6.00; Canada, $8.50; Foreign, $12.00 per year. Single copy 25 cents.

Entered as second-class matter, June 18, 1879, at the Post Office at New York, N. Y., under the Act of March 3, 1879.

PRINTED IN U. S. A.

Anthracite Miners vs. The People

IT is the old story with the anthracite conferences. The labor union snarls. The operators bungle their case. Federal officials make impotent threats. Behind them looms the shadow of Governor Pinchot, who settled the last controversy by giving the miners what they wanted and raising the price of coal to the public.

The amazing thing is that the public lets wool be pulled over its eyes. The public may be stupid, but even the stupid may be led rightly by intelligence. That the public is not so led is largely the fault of the anthracite operators, who better than any one know all the facts but consistently fail to present them in a clear and convincing way. Even if they succeeded in doing so, it is probable that they would not be believed. Possibly the operators could put the case in the hands of an impartial commission of engineers that would accomplish what the late United States Coal Commission was intended to do, but signally failed to do. The anthracite conditions are not so complicated—no economic conditions are so complicated—that they cannot be clarified if the task be undertaken in the right way.

The only object of the operators in bringing out all the facts would be to influence public opinion. At the present time public opinion is suspicious. The average man in anthracite burning territory knows that he must have anthracite, and generally he must obtain it from a single dealer in his town and pay whatever price that dealer demands. For coal he is unable to resort to a chain store, as he is for other commodities, and he resigns himself to the thought that probably he is being squeezed all down the line and complacently views the contention of the miners that some of his juice may be wrung out for their benefit. He is profoundly ignorant of the extravagant benefits already enjoyed by the miners.

It does not matter at all what is the unearned increment of the coal lands on which the operators expect to earn dividends. Nor what are the salaries paid their managers. Nor whether the managements are perfect or imperfect. Nor any of the details that are raised to becloud the real issue. The simple fact is that the anthracite mining industry is in the hands of 150,000 unionized miners. They are protected by a State law from the competition of other coal miners, who, to the number of 200,000 or so, are idle and would like to work. They dominate their own leaders, who lead only as, how and whither they are pushed. With a general economic index for the nation, which implies the average of commodity prices, cost of living and all factors, of about 1.8 times the prewar, the anthracite miners have been receiving a wage rate of something like 2.5 times the prewar and with that they are not satisfied.

If Governor Pinchot steps in and composes the controversy as he did once before, the miners will get what they want and the consumer of coal will pay the bill. He must keep warm and must burn about the same quantity of coal every year. If he has to pay more for it he will have less for provisions, clothing and other things. The miners will have still more for provisions, gasoline and other things.

The newspapers parade this controversy as a chronic affair between operators and miners. In truth it is an affair between a Soviet and the public. If the public had the sense to understand this it might become a real fight. There might be a popular demand that the wages of the anthracite miners should be reduced 25 per cent and that the Pennsylvania restrictive law be repealed so as to let other miners work in these mines if they want to. With the expression of such a demand both Washington and Harrisburg would quickly see where the finger of political fate pointed. There would be a cessation of trite and fearsome talk and a backing for a fight to the finish.

WHAT Germany could do with the Ruhr occupation terminated appears from the complete statistics of her steel exports that are now available. These exports have been for some months at the highest rate since the war. For the five months, November to March inclusive, the average has been over 265,000 tons per month. This volume is second only to that of Great Britain for the same period. In December the German shipments abroad were 319,600 tons, exceeding those of any other country for that month. The maintenance of such a rate would mean the development of German competition into a really

formidable factor in international steel trade. Great Britain has been feeling it severely in the displacement of domestic steel in the home market and in the low prices it is compelled to make in outside markets to keep its exports of steel from slipping back.

Foreign Buying of Special Machines

MAKERS of special machinery are much busier than they were a few months ago and it is significant that a growing percentage of recent orders is from foreign customers. The classifications range from machine tools through a variety of types and uses, some branches of the industry participating more than others. But generally speaking, these many types of machines are in largely increased demand.

A typical experience is that of makers of machinery for drawing smaller sizes of wire and converting it into wire specialties. In recent weeks orders have been received from India for wire drawing machines and wire nail machines. Another Indian customer has ordered wire-coiling machines. Australia and South America also have bought wire drawing and wire nail machines. There are new European orders in the same lines, and inquiries from other users in foreign countries indicate that export business has become important. Of special interest in connection with some of these recent orders is that they are the result of industrial awakenings among hitherto non-manufacturing people, of which India is a notable example.

As every one knows, the United States leads the world in machinery which is characterized as special. Other nations do little more than dabble in this branch of machine design. Yankee invention has gone very far in creating equipment for the automatic, cheap production of hundreds of articles which enter into everyday life as necessities or luxuries. This machinery has come into wider use abroad, and its builders are convinced that the future will see this demand very considerably extended.

Home Markets and Foreign Markets

CONTRASTS between the export situation for iron and steel products in the United States and that in some of the European countries are apparent on the face of every return. The United States consumes at home considerably more than nine-tenths of what it produces. Several of the European countries export more than half of their production. British exports have been both above and below half of the total steel production.

Two instances will illustrate the difference between the British position and that of the United States. In 1923 Great Britain produced 688,000 tons of galvanized sheets and exported 602,390 tons, thus retaining for home consumption only 13 per cent of the output, or 85,610 tons. In the same year the United States produced 1,055,742 tons of galvanized sheets and exported 114,748 tons, retaining for home consumption 940,994 tons, or 89 per cent of the output. Of tin plate Great Britain produced 727,400 tons and exported 551,124 tons, retaining for home consumption 176,276 tons, or only 24 per cent. In the same year the United States produced 1,506,861 tons, exported 124,452 tons, or a little more than 8 per cent, and retained for home consumption the great bulk of the output, or 1,382,409 tons.

Despite the fact that the United States ships so small a percentage abroad of its iron and steel production, it may well be that this small percentage has a sustaining effect upon the home market. Certainly a small influx of foreign material makes its sharp impress at times on domestic prices, as witness some of the low bids made by our manufacturers of cast iron pipe when in competition with the French foundry that has been actively seeking American business in the past year.

Carrying Stocks of Steel

CONDITIONS as to steel have so changed since the pre-war years that fresh consideration of the matter of carrying stocks may be in order. Before the war, as will be readily recalled, there were great movements up and down wherein buyers accumulated stocks and then liquidated them. Steel prices first advanced and then declined. Buyers were put under contract at the successive advances and thus there was inducement to accept deliveries not needed at the moment, for otherwise tonnages would be canceled by mills and higher priced deliveries would have to be taken later. The mills themselves did not wish to carry stocks, the feeling no doubt being that to do so would retard price advances.

Whether or not steel producers were willing to admit it, there was little doubt that the majority of them rather welcomed the fluctuations in demand, the bunching of orders in limited periods affording opportunities to get prices up. Once up, prices might be held by the fact that it was to the interest of the individual mill to squeeze specifications out of contracts rather than to seek fresh orders by the price cutting route, thereby undermining the contracts.

Since the great transportation trouble of 1920 and the very mild one of two years later, the railroads have functioned very well indeed, and as there is ample steel making capacity buyers have not been afraid that they could not secure deliveries as desired. They have stocked only in a mild way and for short periods. This represents a great change from familiar experiences of pre-war times.

The attitude of the mills has not changed. They are indisposed to carry stocks to any greater extent than before the war. It is normal practice at pipe mills to have stocks and ship from stock rather than manufacture on individual orders, and much the same is true in the wire trade, but in neither instance do the stocks ever run particularly large.

If it were true that the carrying of stocks by mills tends to limit price fluctuations it would not necessarily follow that mills would consider it to their advantage to carry stocks. The old idea might remain that periods of relative scarcity furnish the opportunity which sellers need every now and then to get their market prices to the proper and profitable level.

There is another angle in this matter, however, and that is that a plant, or a producing aggregate of plants, may gradually be brought into the physical condition whereby its maximum economy, its lowest per ton cost, is reached at some point below 100 per cent, perhaps at 85 per cent, at 75 per cent or even at 70 per cent. The prevalent, practically universal, idea has been that of minimum per ton cost at 100 per cent, or better still at even more than 100 per cent of "normal" capacity. Improvements, however, can be centered on certain equipment, and made all the greater, whereby a given portion of the total facilities might run continuously, at particularly low cost, and at times make stock. The idea is not in favor with steel producers, mentally constituted as they are, but it is one worth serious consideration.

Record Automobile Output

PRODUCTION of passenger automobiles in the United States and Canada in the first six months of 1925 made a new high record for a half year. Likewise the production of trucks was at the highest. Separate statistics for the United States and Canada are available, in the Department of Commerce reports, only from the beginning of 1924. In that period the Canadian production of passenger automobiles has been 3.8 per cent of the total. Production of passenger automobiles in the United States and Canada has been as follows:

	First Half	Second Half	Year
1922	1,064,428	1,320,763	2,385,191
1923	1,870,623	1,831,946	3,702,569
1924	1,852,137	1,410,627	3,262,764
1925	1,936,700		

The half year runs 4 per cent above the first half of 1924. Thus far the statistical record shows no definite seasonal movement. Neither half of a year is likely to run above the other half. The high month in the first half has come anywhere from April to June, while the high month in the second half has run from August to October.

In the early months of last year there was heavy production in anticipation and stocks of unsold cars became a burden, necessitating sharp curtailment. Then a policy was quite generally adopted of producing according to sales. From the limited record that has accumulated, it appears that the latter policy makes a considerably wider range in the rate of production.

On account of the great differences in weight of cars, those who sell materials to the automobile making industry would be interested in statistics of the weight production. Taking the average weight of a given make at one-third the way from the phaeton to the closed body type, the three most popular cars listing under $1,000 weigh respectively 1623, 2025 and 2344 lb., and the numerous cars listing between $1,000 and $1,300 average a trifle over 2800 lb. for phaetons and 3000 lb. for closed bodies, or say, 2875 for the composite. Estimating relative production of the different makes, a weighted average of all comes out so close to 2240 lb. that one may adopt as a safe and sufficiently close rule, in considering statistics of the number of passenger automobiles produced, that the average weight of all is one gross ton.

With an average weight per passenger car of one gross ton and a recent and prospective production of between 3,000,000 and 4,000,000 annually, it is seen that the amount of steel consumed may easily be overestimated. Consumption in trucks must, of course, be considered in addition. The proportion of trucks to passenger cars in the past three years has averaged between 10 and 11 per cent, but ran 12.2 per cent in the first half of this year, and the average weight of trucks is considerably above that of passenger cars. The scrap produced during manufacture is also an important item.

CORRESPONDENCE

A Merchant View of Business Conditions and the Outlook

To the Editor: In shaping our policy as iron and steel merchants, we have considered the various factors in the business situation and have set down our estimate of them as follows:

Stocks of Merchandise.—From all information obtainable, it seems that the stocks in the hands of producers, jobbers, dealers, merchants and retail stores of all kinds are at low ebb, and in some quarters it is claimed they are the lowest in our history.

Buying.—The best sources of information indicate that buying, so far as the individual is concerned, is about as low as it can possibly be, and is unquestionably on a hand-to-mouth basis. There is absent any indication of speculative buying, buying for replacement or for stocking purposes.

Freight Rates.—A year ago the Administration was talking of reducing freight rates in the Northwest so as to assist the farmers. For the past several months Washington has been talking of the need for increasing freight rates in the Northwest so as to prevent the railroads there from going into bankruptcy.

Federal Taxes.—Everything indicates a reduction in Federal taxes, which should not be to the disadvantage of business.

Politics.—There is nothing serious on the horizon. The country is unquestionably contented and satisfied with President Coolidge.

Foreign Trade.—Regardless of the considerable imports into this country, the balance remains in our favor, this without export demand for steel and general factory products.

Income.—We have practically a mortgage on the world, and the interest that we are receiving on foreign loans and war debts probably justifies further foreign loans.

War Debts.—It is almost a certainty that practically all the war debts will be adjusted on some deferred or compromise basis by the end of the year.

Labor.—There is no surplus of labor; probably will not be with our present immigration law, and there is no prospect of altering the present immigration situation.

Money and Credit.—There is a plentiful supply of both money and credit, with the probability, however, of higher priced money and also the possibility of money and credit being diverted from stocks and bonds to business. Should business improve, preference in the issuance of credit and money would be given to business rather than to stocks and bonds.

Capital.—There are sure indications that many companies have come to the realization that labor cannot be reduced and that they cannot look forward to having their business put on a profitable basis by re-

ducing their labor costs. Having reached this conclusion, they are seeking to find some way to increase the price of their products so that a profit can be realized.

IRON AND STEEL.

Philadelphia, July 17.

The Use of Accelerated Corrosion Tests

To the Editor: We have been much interested in the editorial in THE IRON AGE of July 2 on "Tests for Corrosion and Fatigue." It occurred to us that you might care to know of the methods which this company use in running laboratory accelerated corrosion tests and why we find them valuable, as covered by the accompanying paper which was read before the American Chemical Society at Baltimore last April.

For instance, with our non-ferrous alloy, a customer may report that for a certain condition the metal is exactly what he requires, but that there is a slight discoloration which, while it does not interfere with the practical application of the alloy or the suitability for his product, is objectionable and must be eliminated in order to use our equipment satisfactorily. Then we have a probiem of slightly varying the analysis of the material in order to overcome this objection. This may mean that a very large number of alloys have to be made up and tested under the conditions of an accelerated corrosion test before the problem is solved.

By using our accelerated corrosion tests, as outlined in the attached paper, we can reduce the time necessary to develop this alloy from months to weeks or even days. It is, of course, true that accelerated tests and even long time tests seldom give a true picture of what will happen to the material under service conditions, still they serve as a very good guide, and the chemical equipment manufacturer, in order to show progress, must employ accelerated tests in metallurgical control work and in progressive development of alloys compatible with the increase in the use of corrosive reactions.

DURIRON CO., INC.
W. E. Pratt.

Dayton, Ohio, July 17.

[EDITOR'S NOTE.—The paper referred to above, of which Mr. Pratt and J. A. Parsons are joint authors, is reprinted from *Industrial and Engineering Chemistry*, Vol. 17, No. 4. Copies are available for such of our readers as may desire the full text, but the following, which accompanies the reprint, summarizes its contents:

The type of corrosion data furnished on typical acid resisting metals is tabulated and conclusions are drawn as to the inadequacy of present information and the desirability of additional work on tests and standardization of methods. The possibility and value of standardizing laboratory corrosion tests are shown and a description is given of an apparatus and method of testing which have proved satisfactory.

The use of accelerated tests in metallurgical control work is shown to be practical under certain conditions and the deviation of results of accelerated tests from those of long experience is explained by the electrolytic theory. Typical corrosion curves are given, showing (*a*) initial losses at higher rate than constant loss after 24 hours; (*b*) error in predicting life of apparatus based on accelerated tests, (*c*) the use of constant loss rate in approximating depth of corrosion or penetration in inches per year, (*d*) the establishment of a factor to interpret the short accelerated test to the results of the constant loss rate of corrosion. Accelerated corrosion tests are practically applied to show (*a*) the effect on corrosion by changing the physical properties of the metal, and (*b*) the effect on corrosion by changes in the chemical composition of the alloy.]

STEEL TREATERS

Preliminary Details of the Seventh Annual Convention and Exhibition

Most of the details necessary in preparation for the seventh annual convention and exhibition of the American Society for Steel Treating, to be held in Cleveland, Sept. 14 to 18, have been worked out. W. H. Eisenman, the society's secretary, indicates that the 1925 convention and exhibition will be the largest in the history of the organization.

Both of the exhibition floors of Cleveland's large municipal auditorium will be filled with exhibits of machinery for making tools and machinery and with apparatus and products for the treatment of steel. Nearly 200 companies will have their products on exhibition. A number had to be disappointed because of lack of space. Ninety makers of machine tools and small tools will have exhibits in operation and many others will show metals, metal treating equipment, testing and inspection equipment.

Assembled in Cleveland will be many leaders in the steel treating field and machinery industry. Here, too, will be members of the Society of Automotive Engineers who are to hold their production meeting to coincide with the exhibition. It is estimated that the two organizations will draw to Cleveland approximately 10,000 visitors for the study of steel. W. S. Bidle, Cleveland, is president of the society for steel treating. He has named J. B. Dillard, of the Cleveland Twist Drill Co., chairman of the general convention committee. The program for the convention follows:

MONDAY, SEPT. 14

9.30 a. m.—Technical Session, Ball Room, Cleveland Hotel.
1.00 p. m.—Exposition opens, Public Auditorium.
2.30 p. m.—Technical Session, Ball Room, Hollenden Hotel.

TUESDAY, SEPT. 15

9.30 a. m.—Technical Session, Ball Room, Cleveland Hotel.
1.00 p. m.—Exposition opens.
1.30 p. m.—Plant Inspection.
2.30 p. m.—Technical Session, Ball Room, Hollenden Hotel.
9.30 p. m.—Smoker and Annual Frolic, Rainbow Room, Winton Hotel.

WEDNESDAY, SEPT. 16

9.30 a. m.—Annual Meeting of A. S. S. T., Ball Room, Cleveland Hotel.
10.30 a. m.—Technical Session, Ball Room, Cleveland Hotel.
1.00 p. m.—Exposition opens.
1.30 p. m.—Plant Inspection.
2.30 p. m.—Technical Session, Ball Room, Hollenden Hotel.
9.30 p. m.—Annual Dance, Ball Room, Cleveland Hotel.

THURSDAY, SEPT. 17

9.30 a. m.—Technical Session, Ball Room, Cleveland Hotel.
10.00 a. m.—Exposition opens.
2.30 p. m.—Technical Session, Ball Room, Hollenden Hotel.
5.30 p. m.—Exposition closes for the day.
6.30 p. m.—Annual Banquet, Ball Room, Cleveland Hotel.

FRIDAY, SEPT. 18

9.30 a. m.—Technical Session, Ball Room, Cleveland Hotel.
1.00 p. m.—Exposition opens.
1.30 p. m.—Plant Inspection.
2.30 p. m.—Technical Session, Hollenden Hotel.
10.00 p. m.—Exposition closes.

The society's 29 chapters are organizing "On to Cleveland" parties with a view to making the Cleveland convention the largest yet held. Special plans are being made for the entertainment of visitors with golf club parties, outings, inspection tours and other attractive items.

Details are being worked out by sub-committees of Clevelanders named by Chairman Dillard. Heading these committees are: E. C. Smith, Central Steel Co., Meetings and Papers Committee; W. C. Bell, Case Hardening Service Co., Finance Committee; H. M. Boylston, Case School, Ladies' Entertainment Committee; Mrs. H. M. Boylston, Ladies' Entertainment Committee; W. F. Abel, Men's Entertainment Committee; J. V. Emmons, Cleveland Twist Drill Co., Information Committee; A. H. Frauenthal, Chandler Motor Co., Transportation Committee; W. H. White, Atlas Alloy Steel Corporation, Hotels Committee; G. J. Allen, Heppenstall Forge & Knife Co., Plant Inspection Committee.

REFUSES FREIGHT REFUND

Interstate Commerce Commission Holds "F.O.B. Origin" Compatible with Delivered Price Basis

WASHINGTON, July 21.—Passing upon a complaint by the Borden Co., New London, Wis., manufacturer of condensed milk, the Interstate Commerce Commission in a decision just announced held that joint rates on shipments of tin plate in carloads from McKeesport, Pa., Yorkville, Ohio, and Cumberland, Md., from August, 1920, were unreasonable and for the future established a rate of 51c. from McKeesport and Yorkville, and 53c. from Cumberland. Shipments were routed by way of Frankfort or Ludington, Mich., and by car ferry across Lake Michigan to Manitowoc or Kewaunee, Wis., and by rail to New London.

The commission declined to award reparation, pointing out that the shipments were sold on a Pittsburgh-plus basis and that the freight charges were prepaid by the consignors but were not separately billed in the invoices, amounts not disclosed, leading to the conclusion that the prices were destination prices.

"It is true," says the decision, "that some of the contracts contained the term 'f. o. b. origin.' The purpose of this provision of the contract seems to have been to insure prompt payment for the goods and to place upon the purchaser all transportation risks; and its presence does not alter the fact that the goods were priced on a delivered basis.

"It is clear that as to shipments from Cumberland complainant did not pay or bear freight charges based on the rates herein found unreasonable, and is not entitled to reparation. On the shipments from McKeesport and Yorkville, while it might be said that the consignee paid an invoice price which reflected freight charges based on the Pittsburgh rate, the fact that these points took the same rate as Pittsburgh is but a coincidence and the evidence falls short of proving that complainant under these contracts paid or bore as such the freight charges assessed under the particular rates herein found unreasonable."

In dissenting, Commissioner McManamy said that it "is a misconception of the meaning and the purpose of the term 'f. o. b. origin' to hold that the consignee does not pay or bear the freight charges simply because goods were sold on the Pittsburgh-plus basis, which, after all, is simply a means of equalizing prices as between the different plants operated by the producer, is solely for benefit, and ought not to be permitted to work to the disadvantage of the consumer."

GERMANY LOW ON PIPE BIDS

Gelsenkirchen Works Low on 75 Per Cent of 9000 Tons for New York

On a total of 9000 tons of cast iron bell and spigot pipe and fittings, bids on which were opened by the Department of Water Supply, Gas and Electricity, New York, July 20, the Gelsenkirchener Bergwerks A. G., Dusseldorf, Germany, was low on about 75 per cent of the items, the total of its quotations being about $350,000. Other low bidders were the Standard Cast Iron Pipe & Foundry Co. for about $34,000 worth, United States Cast Iron Pipe & Foundry Co. for about $21,000, Central Foundry Co. for about $11,000, Flockhart Foundry Co. for about $23,000, Chapman Valve Co. for about $23,000, A. P. Smith Mfg. Co. for about $31,000 and the Kennedy Valve Mfg. Co. for about $22,500 worth.

A comparison of the bids per ton is afforded by the item calling for 1000 tons of 8 to 12-in. pipe, the only section on which the Pont-a-Mousson works of France, quoting through B. Nicoll & Co., New York, submitted a bid. On this portion the Gelsenkirchener Bergwerks quoted $48.55 per ton, the Pont-a-Mousson works was second with $48.80 per ton and the United States Cast Iron Pipe & Foundry Co. third lowest with $52.95 per ton. On most of the items where the German company was low, it was $1 to $2 under. These prices are not comparable to the price of cast iron pipe, f.o.b. New York, as the inquiry of the city called for furnishing, delivering, loading, stocking and storing cast iron pipe, special and valve box castings, valves and double-nozzle fire hydrants, to different points in the boroughs of Bronx, Brooklyn and Queens.

There were 14 bidders in all, of which the German and French companies were the only foreign makers, although previous to the opening of bids, agents of Swedish, Dutch, Belgian and British makers had manifested interest in the specifications. The Gelsenkirchener Bergwerks is understood to have submitted its bid through a special representative temporarily in the United States, though its regular representative, through membership in the Siemens-Rhein-Elbe-Schuckert-Union, is Dr. K. G. Frank, 114 Liberty Street, New York.

Bids for Cast Iron Pipe for Panama Canal

WASHINGTON, July 21.—After rejecting bids opened on June 24 for 2200 net tons of 30-in. cast iron pipe, the Panama Canal reopened tenders yesterday, five manufacturers submitting figures. As in the previous opening, the lowest bidder was the Société Anonyme Des Hauts Fourneaux et Fonderies De Pont-a-Mousson, near Nancy, France, the bid being made through B. Nicoll & Co., New York. The new bid of the French maker was $47 per ton delivered at Cristobal, Panama Canal, and completion of delivery was promised in 80 days. Its previous bid was $45.74, delivered at Cristobal, in 75 days. Should the duty of 20 per cent applicable to cast iron pipe imports be added, the new bid of the French manufacturer would come to $56.40, or considerably higher than the American bids.

The lowest bid by domestic producers was submitted by American Cast Iron Pipe Co., Birmingham, at $7 per foot, delivered at Cristobal or Balboa in 100 days. But it was stated that this offer, made as an alternate bid, did not follow specifications of the Panama Canal, and likely would not be considered. The next lowest American bid was submitted by the United States Cast Iron Pipe & Foundry Co., Birmingham, at $49 delivered at Cristobal in 60 days. The previous bid of this maker was $54.40 delivered at Cristobal in 80 days. The Warren Foundry & Pipe Co., Phillipsburg, N. J., submitted a bid of $53.95, delivered at Cristobal or Balboa in 100 days. The Standard Cast Iron Pipe & Foundry Co., Atlanta, Ga., submitted a bid of $53.50, delivered at Cristobal in 120 days.

Rates to Texas Points Reduced

WASHINGTON, July 21.—In a decision announced today the Interstate Commerce Commission ordered a reduction in rates on iron or steel sheets, plates, tank iron, galvanized roofing, angles and rivets in carloads, from St. Louis territory and other points of origin in Ohio, Kentucky, New York, Pennsylvania, Indiana, Illinois and Alabama, to Dallas, Fort Worth and Harrys, Tex. The lower rate is to become effective on or before Oct. 15.

The complaint was directed mainly to the rate of 73c. from St. Louis. It was ordered that this rate should not exceed 54c. to Dallas and 55.5c. to Fort Worth and Harrys. Joint rates from other points of origin were fixed at the same levels, plus the established differentials over St. Louis in each instance.

The matter of allowing reparation was left open to further consideration. Among the principles laid down in this connection is one based upon the question as to whether the material was bought upon a Pittsburgh plus basis and the manner of invoicing. The complainants were the Atlas Metal Works and others.

International Railroad Congress

Materials Used in Axle Boxes for Railroad Rolling Stock—Breakage of Rails

LONDON, ENGLAND, July 6.—At the International Railroad Congress, held in London this week, reports were presented on the question of reducing the cost of traction from the point of view of the lubrication of axle boxes of all rolling stock. The report for the British Empire was presented by Sir Henry Fowler, deputy chief mechanical engineer of the London, Midland & Scottish Railway. With the development of steel castings, the majority of railroad administrations appear to have adopted this material for locomotive axle boxes. The reduction in the cost of production and machining for a steel casting is in its favor as compared with a forged axle box, but both types have to be fitted with a separate brass, and consequently have the disadvantages of discontinuity of heat conductivity and low scrapping value. A notable exception to this is found in the bogie axle box of the New Zealand Government Railways, in which the brass is cast in the box, which is a steel casting.

Some of the more modern examples show a reversion to the solid type made of non-ferrous alloys with white metal pockets. Thus, two British railroads use coupled and bogie axle boxes of manganese bronze (brass), whereas another uses solid brass axle boxes for the coupled and bogie wheels; the tender and bogie boxes being usually of cast iron or cast steel, or cast steel with a separate brass. Dust shields are usually fitted to tender boxes, but their adoption for locomotive boxes does not seem to be the general practice.

The most usual metal for axle box brasses and solid boxes appears to be a bronze containing from 8 to 15 per cent Sn, and up to 5 per cent of either Zn or Pb, or both. The Canadian National Railways use a bronze mixture containing a high percentage of lead and also use a high lead bronze for bogie and truck brasses (up to 20 per cent Pb). The white metals (anti-friction alloys) used vary greatly in composition and can be divided into four categories, of which the following are typical:

No. 1 (high tin)	No. 2 (medium tin)	No. 3 (high lead)	No. 4 (medium lead)
Sn 85	Sn 60	Pb 75	Pb 48
Sb 10	Pb 28	Sb 13	Sn 40
Cu 5	Sb 10	Sn 12	Sb 10
	Cu 2		Cu 2

All these are stated to give satisfactory results under the conditions obtaining. The New Zealand Government Railways use a white metal containing no tin—Pb 85.7, Sb 14.3—which closely approaches the eutectic mixture of lead and antimony, in which the antimony is 13.4 per cent. In general, the higher the tin content the harder is the white metal; with bearings subjected to severe reversals of stress, a high lead content is not satisfactory.

Coaching stock axle boxes are usually of the outside bearing type and are provided with open fronts. In the United Kingdom cast iron boxes are generally used, but in other countries cast steel is usually employed for new stock. The angle included at the center of the journal by the arc of contact is smaller than for locomotive bearings, while the pressure on the journal is higher. The white metals used vary considerably in composition, a tin base or lead base being favored by approximately the same number of roads.

American Practice

The report for America was presented by George H. Emerson, chief of motive power and equipment, Baltimore & Ohio Railroad, who reported that considerable divergence of opinion exists about the pressure allowable on the journal. In the case of locomotive axle boxes the values vary from 104 lb. to 298 lb. per sq. in. The general average figure for locomotive tenders is 400 lb. per sq. in., for passenger coaches from 300 lb. to 400 lb., and for freight cars from 450 lb. to 500 lb. per sq. in. The question of limits of wear for axles and bearings has been standardized as far as possible by the Interstate Commerce Commission. The composition of the white metal used as a lining for journal bearings varies considerably, but, generally speaking, the alloy used is of a high lead type.

With regard to other countries, except the British Empire and America, M. J. Tete of the Paris, Lyon & Mediterranean Railroad, reported that the use of cast steel for the body of the axle box is extending more and more and that this appears to be the only suitable material for the coaching and wagon stock of large railroads, in view of the heavy loads carried and of the violent shocks often experienced during switching operations. In the case of dust shields, the materials used consist chiefly of wood, felt stiffened with sheet metal or leather and oil cloth. In one case the dust shield takes the form of a disk of malleable cast iron which curves inward and is fitted in the axle.

Breakage of Rails and Joints

Four reports were presented on the subject of rail breakage. The American report was prepared by W. C. Cushing of the Pennsylvania Railroad. The result of the examination of many "split-head" rails seemed to show that failure is due to segregation. Such rails nearly always consist of a hard, unsound interior and a softer exterior. The flow of softer metal develops a crack in the harder, unsound and less ductile interior, resulting in a "split-head." The failure of rails, due to slight internal flaws and cracks, has given rise to extensive research. The general conclusion arrived at is that a certain relation exists between high percentages of carbon (0.6 to 0.9 per cent) and the formation of transverse fissures, although the cause of defects is thought to be thermal rather than chemical.

Apart from this, little progress has been made toward the elucidation of the problem. The strength and stiffness of fish plates in American practice has been improved to a large extent by (a) modifications in the design; (b) the employment of open-hearth instead of Bessemer steel in the manufacture; (c) the heat-treatment of the steel, either with or without additional alloys. These improvements have reduced joint breakages to an almost negligible quantity.

The British Empire report of W. C. J. Brown of the London & North Eastern Railway showed that primary cause of fracture, where it was not due to excessive wear or to abnormal conditions, could be attributed to chemical or mechanical defects in the steel and the weakness of the track at the joints and in their vicinity. Further attention should be given to the improvement in manufacture, with a view to eliminating flaws, segregations and other chemical and mechanical defects.

In the French report of M. Merklen and M. Cambournac, it was shown, also, that the initial causes of rail fractures are piping, segregation, zones of small blowholes, slag inclusions, excessive brittleness and extremely fine cracks which had escaped notice during inspection.

Cooperation with Rail Makers Essential

M. T. Willem, of the Belgian State Railways, in his report for other countries said that age has an effect on the quality of the rails, as it appears that the phenomena of recrystallization and modifications of texture in material subjected to repeated shock show themselves in rails that have been long in service. Many railroad systems now are using sorbitic rails, but are unable to give information on the results obtained. The Belgian State Railways have put down trial sections

of sorbitic rails, titanium steel rails and of electric furnace steel rails, but the European War interrupted the experiments and prevented practical information being obtained.

Mr. Willem referred to a new instrument from Japan, called the "Magnetic Rail Defectoscope," by which faults are determined by the amount of the magnetic leakage flux, when the rail is magnetized.

Among the various points on which agreement was reached in the discussion was the necessity of investigation jointly with the steel manufacturers to find the initial causes of fracture. The segregation found in the metal of the greater number of fractured rails appears to be the most frequent primary cause of trouble. Heat treatment of rails appears to have the effect of improving the quality of the metal and certainly reduces its brittleness. It was thought necessary, upon consideration of the discussion, to follow up these deductions by further experiments with heat-treated rails.

PEAK PIPE DEMAND OVER

American Cast Iron Pipe Co. Anticipates Close Buying for Next Quarter

BIRMINGHAM, July 21.—The trade has been informed by the American Cast Iron Pipe Co. that the volume of unshipped tonnage on books is about normal for this season of the year, "but we believe the peak demand for the year is past and that buying for the next 60 to 90 days will be on a hand-to-mouth basis and largely for emergency jobs."

The statement continues: "The larger projects will probably be delayed where conditions and circumstances permit so as to take advantage of the winter price policy which has now more than justified itself from the standpoint of both consumer and producer. It has been a long time since business has been as spotty as in the first six months of 1925. The demand for cast iron pipe in some sections of the country has been very meager, while in other sections it has broken all records for those sections. The same is true with reference to the different sizes of pipe, there being a greater proportionate demand this year for the larger diameters than ever before. All of this has tended to produce a situation at our foundry that at times made it extremely difficult to give customers the deliveries they needed on their orders, as most purchases have been made on a basis of quick shipment."

Fabricators' Organizations in California

SAN FRANCISCO, July 15.—The official name of the northern California fabricators' organization has been changed from the Structural Steel Institute of California to the California Institute of Steel Construction, Northern Division. It is understood that the fabricators in the southern part of the State will change the official name of their organization so that hereafter it will be California Institute of Steel Construction, Southern Division. John L. Clymer, manager of the Northern Division, in explaining the reason for the change of name, said that the old name was misleading in many respects and not altogether representative of the purposes and scope of the organization, which operates locally in much the same way that the American Institute of Steel Construction operates nationally.

Structural Steel in the Santa Barbara Earthquake

SAN FRANCISCO, July 15.—According to local engineers there was just one self-supporting steel frame building in Santa Barbara, Cal., and that was the post office building. "This stands up," say engineers, who have made investigations of the damage done by the earthquake, "without having suffered any damage to the frame in the midst of fallen buildings and debris." William Arthur Newman, architect, and supervisor of United States Government buildings on the Pacific Coast, in speaking about the Santa Barbara post office building recently said: "The Santa Barbara post office is an example of how it pays to build substantially. It is the only all-steel frame building in the city, and it withstood the shock, though buildings crumbled all about it. There is no damage in the post office building except a few cracks in the brick veneer. This proves that it is the safest type to build, and less expensive in the end."

Paul F. Gillespie, sales manager, Judson Mfg. Co., San Francisco, following his return from Santa Barbara said that "every building material firm ought to send a representative there—it's good education."

Fabricated Plate Bookings in June Largest This Year

WASHINGTON, July 21.—Bookings of fabricated steel plate in June of the present year totaled 34,402 tons, according to reports received by the Bureau of the Census from 35 firms. This represented 51 per cent of capacity, data for one concern being estimated. May bookings were 27,684 tons or 41 per cent of capacity. June's volume was greater than any month this year. Of the June bookings, 16,327 tons were for oil storage tanks, 2653 tons for refinery materials and equipment, 1508 tons for tank cars, 2192 tons for gas holders, 373 tons for blast furnaces and 11,349 tons for stacks and miscellaneous purposes. Total fabricated bookings for the first six months of 1925 were 154,878 tons as against 130,716 tons and 332,333 tons, respectively, for the corresponding periods in 1924 and 1923.

More Employment in Pennsylvania

HARRISBURG, PA., July 21.—Conditions seem to be picking up slightly in the Pennsylvania metal trades, if the situation is accurately reflected in the semi-monthly report to Richard H. Lansburgh, secretary of Labor and Industry for the period ended July 15.

Pittsburgh has experienced an increase in number of openings, but there is no semblance of a shortage of experienced workmen. Most openings have been filled "at the gate by the hiring of unemployed workmen who reside in the immediate districts." Philadelphia says that first class toolmakers and patternmakers seem to be in special demand, with the supply limited. Vertical and horizontal boring mill, radial and multiple drill press operators, engine lathe operators and tool grinders are in demand.

The Harrisburg report asserts that the "process of curtailment has reached its limit, and that an expansion program may develop." Conditions are declared much better than those of a year ago, with the larger iron and steel concerns operating fully 25 per cent better. Steadiness of the present situation has caused a hopeful sentiment among the smaller industries. Such curtailment of forces as there has been has been confined to the semi-skilled and undesirable unskilled workers.

The Oley and Ninth Street mills of the Reading Iron Co. are reported by Reading to have been reopened, while the Reading Tube Works has resumed activity after a week's shutdown. The Reading Steel Castings Co. has added a night force. Stove foundries are practically closed, with little expectation of resuming work until some time in August. Brass and aluminum foundries continue busy. Experienced molders can be placed, while there is a shortage of machinists.

In Erie there is a surplus of all types of skilled workers.

OPPOSE RATE CUT ON IRON

Say Northern Furnaces Are Entitled to Benefit of Location

CINCINNATI, July 22.—Objections to the proposed reduction in pig iron rates from the Birmingham district to Saint Louis and Ohio River crossings were set forth at the hearing here before an examiner of the Interstate Commerce Commission during the past week. Chicago interests pointed out that the delivered price of No. 2 foundry iron in Cincinnati, between January, 1922, and October, 1924, showed an average differential of $2.80 in favor of Birmingham district producers as compared with Chicago furnaces. During the same period the former had a differential of $3.27 on Louisville deliveries. Protests against the new rate were made by representatives of the Otis Steel Co. and the McKinney Steel Co., Cleveland, the By-Products Coke Corporation, Chicago, and the Saint Louis Coke & Iron Co., St. Louis.

Northern pig iron furnaces are entitled to any benefit that may accrue to them by reason of their proximity to markets, according to S. S. Bridgers, Ironton, Ohio, testifying on behalf of southern Ohio companies. Mr. Bridgers introduced exhibits showing that if the proposed rates from Birmingham go into effect, the rates from Ironton to Cincinnati and other points should be reduced.

Annual consumption of pig iron in Louisville, from July, 1924, to July, 1925, was 100,000 tons, of which the plant of the Standard Sanitary Mfg. Co. took 60,000 tons, stated a representative of the Louisville Board of Trade, appearing in behalf of the reduced rates. He contrasted the proposed schedule of $3.39 from Birmingham to Louisville with that of $2.41 from the Ironton district by water and rail switch movement in Louisville.

Rates from Ironton to Cincinnati are in line with the proposed rate from Birmingham to Cincinnati, according to an exhibit filed by Samuel Herndon, manager of the traffic department of the Cincinnati Chamber of Commerce. Mr. Herndon also filed a sworn statement of D. P. Eggenberger, traffic manager Monitor Stove Co., Cincinnati, to the effect that "in previous years it has been necessary and preferable to secure a large percentage of Birmingham iron due to the analysis necessary to make proper furnace castings." Due to the high delivered cost of Birmingham iron the company is not buying it at all since proper analysis iron is available at Ironton, Ohio. However, if Birmingham iron could be placed at the company's plant at the same delivered price as Ironton iron, the company would prefer to buy Birmingham iron due to the fact that a certain amount of it will produce a better mixture.

Mr. Herndon quoted a previous decision of the Interstate Commerce Commission which stated that "relative distances alone are not controlling commercial competition and interests of consumers are also pertinent considerations. Consumers may properly have the widest possible market consistent with justice to the carriers, and to that end and also in their own interests, carriers may, within reasonable limits as a matter of traffic policy, accord competing producing centers located at different distances from common centers of consumption identical rates."

Production of pig iron by Alabama furnaces has been greatly restricted in the past few years because they have been unable to compete in Northern markets, stated C. A. Bryan, chairman, pig iron committee, iron and steel shippers' conference of the Birmingham district. Mr. Bryan said that Alabama furnaces had 150,000 tons of pig iron in stock on Dec. 31, 1924. This constituted about 20 per cent of the annual production. This was reduced 20,000 tons in the first half of this year during which period 58 per cent of the furnaces were in blast. Mr. Bryan's figures did not include the furnaces producing basic iron converted into steel at the plants of the furnace company.

The hearing, which began on July 13, was not concluded until July 16. Present rates from Birmingham will remain effective until Nov. 3.

BUILDING TRADE ACTIVE

Otherwise Seattle Iron and Steel Markets Show Little Movement

SEATTLE, WASH., July 17.—The Seattle building trade continues very active, permits showing a steady increase each month, but steel and metal-working lines are quiet. Some improvement has come to the lumber trade in the past few weeks. Japan has placed some large orders for lumber here, the first business of any note from that country in some time.

Local sales managers for Eastern steel mills find the market extremely quiet and they see nothing in sight to indicate early betterment. Jobbers make the same report, stating that their total sales in June were less than in May, while so far this month they have been less than in the same period in June. Jobbers and manufacturing consumers are buying only what they must have to meet actual needs. Prices continue weak, notably plates, sheets, wire products and scrap. Buyers say there is no incentive to anticipate needs in the face of present unsatisfactory conditions. The salmon pack is now in full swing in Alaska, and will be slightly larger than last year's.

In structural steel what little new work is being placed is going at low prices that leave little profit. On about 200 tons of small shapes for transmission towers in Tacoma, placed recently, a local maker made a price of 2.45c., delivered on the ground. The towers will be erected by the Puget Sound Iron & Steel Co. An inquiry is out for 360 tons of plain material for a highway bridge at Aberdeen, and one for 130 tons for a bridge at Tacoma. The State will soon enter upon a program of bridge construction involving an expenditure of nearly $3,000,000. Plain material is quoted at 2.40c. to 2.45c., c.i.f. Seattle dock, equal to about 1.65c., Pittsburgh.

Plates are in little demand, not enough new business coming out to test prices. One large Eastern mill is naming 2.35c., Seattle, equal to not over 1.60c., Pittsburgh mill. Much of the local demand for plates is being supplied by the local Pacific Coast Steel Co.

Merchant steel bars are held here at 2.40c. by Pittsburgh mills, but as low as 2.30c. is being quoted by at least one nearby maker. Demand for reinforcing bars is more active, due to the large amount of new construction work under way. Reinforcing bars are sold at 2.50c. to 2.65c. by the local mill. Jobbers are quoting about 3.10c., but in Portland lower prices are being made as foreign bars are coming into that market quite freely.

In the local sheet market several Eastern mills have been naming low delivered prices for some time, but little new business has resulted. Jobbers are carrying light stocks. Demand for lighter sheets is better than for the heavier gages.

Scrap is very quiet, the leading buyer here, the Pacific Coast Steel Co., being closed for repairs and inventory and therefore out of the market. Heavy melting scrap is $9.50 to $10, while cast iron scrap ranges from $14 to $16 per gross ton.

Blast Furnace Plant for Brazil

WASHINGTON, July 21.—Word has been received by the Department of Commerce that the Brazilian government has negotiated with local interests for the erection of iron and steel furnaces in a city in Brazil, and also for the construction of a foundry in which the products of the furnaces are to be used. For further information address industrial machinery division, Department of Commerce, reference No. 174754.

Coal Strike Threat Helps Market

But British and Continental Producers Still Face Dull Demand and Weak Prices—Strike Affects 75,000 Men

(By Cablegram)

LONDON, July 21.

THE labor outlook is very obscure. A slightly improved demand for pig iron has developed among home consumers, to cover against possible stoppage of coal mines. Export inquiry for hematite iron is also broadening.

The Consett Iron Co., Ltd., Durham, damped one blast furnace and only eight hematite furnaces are now blowing on the Northeast Coast and seven on the Northwest Coast.

Foreign ore is idle. Bilbao Rubio is nominally 20s. 6d. ($4.98), c.i.f., Tees.

Steel demand remains dull. Export prices generally are lower and further concessions seem likely. Continental markets are quiet. Limited quantities of semi-finished steel have been sold but consumers generally are indifferent.

Prices are not affected by the Belgian labor dispute, which now involves 75,000 workers.

Negotiations of the International Rail-Makers' Syndicate have proved abortive and a further conference is anticipated in September. The Franco-German agreement respecting the Saar region operates for four months on ratification by respective governments. France is allowing the monthly export of 10,000 tons of steel scrap to England, Belgium and Italy. The Vulkan Werke received an order for a 25,000-ton floating dock for Bordeaux on reparations account.

Tin plates continue quiet and easier, users waiting developments. Galvanized sheets are in brisk demand and there is good business in Indian specifications, some makers being booked full to the end of September. Japan is buying moderately in black sheets.

Wants Two Shifts Again

LONDON, ENGLAND, July 20.—Dull conditions continue in the iron and steel markets and the position is becoming increasingly serious. The price of pig iron falls continually, yet makers seem unable to dispose of their stocks. Production is at a low ebb and with trouble threatening in the coal fields, the outlook is exceedingly serious. It is not surprising therefore that certain sections of the trade have applied for some kind of Government assistance. Official circles are very reticent on the matter and the question has been referred to committees for investigation.

The bad state of trade is reflected in the balance sheets of some of the largest manufacturers recently published. Baldwins, Ltd., have had to pass the dividend on all preference shares, while Richard Thomas & Co., Ltd., the largest tin plate manufacturer, has passed the ordinary dividend. In both cases the directors explain their action as being due to the depression in trade during the financial year which ended June 30, and the necessity of conserving cash resources in the present uncertain outlook. Baldwins, Ltd., with a capital of £4,000,000 had not paid any ordinary dividend since 1921.

In the course of his review of the position Lord Invernairn, chairman William Beardmore & Co., stated that 90 per cent of the manufacturers of iron and steel, ships and locomotives cannot compete with the prices quoted by their foreign competitors. This he ascribed to the combined effects of high taxation, high wages, short working hours, low labor efficiency, high freight rates and dock charges and the high cost of fuel. He mentioned as ridiculous the fact that the unskilled laborer employed, say, in the cleansing departments of municipalities should be paid from 10 to 30 per cent more than the skilled tradesman.

He made several concrete suggestions. He regards

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.86 per £1, as follows:

Durham coke, del'd	£1	1½s.			$5.22	
Bilbao Rubio ore†	1	0½			4.98	
Cleveland No. 1 fdy.	3	15½			18.35	
Cleveland No. 3 fdy.	3	11½			17.39	
Cleveland No. 4 fdy.	3	10½			17.13	
Cleveland No. 4 forge	3	10			17.01	
Cleveland basic	3	12½			17.62	
East Coast mixed	3	17			18.71	
East Coast hematite	4	19			24.06	
Ferromanganese	15	10			75.33	
*Ferromanganese	15	5			74.11	
Rails, 60 lb. and up	8	10	to £9	0s.	41.31	to $43.74
Billets	6	10	to 7	5	31.59	to 35.23
Sheet and tin plate bars, Welsh	6	10	to 6	15	31.59	to 32.80
Tin plates, base box	0	18¾	to 0	19¼	4.56	to 4.68
					C. per Lb.	
Ship plates	8	5	to 8	15	1.79	to 1.90
Boiler plates	12	10	to 13	0	2.71	to 2.82
Tees	8	5	to 8	15	1.79	to 1.90
Channels	7	10	to 8	0	1.63	to 1.74
Beams	7	5	to 7	15	1.57	to 1.68
Round bars, ¾ to 3 in.	8	15	to 9	5	1.90	to 2.01
Galv. sheets, 24 gage	16	0	to 16	5	3.47	to 3.53
Black sheets, 24 gage	11	10			2.50	
Black sheets, Japanese specifications	15	5			3.31	
Steel hoops	10	15	and 12	10*	2.33	and 2.71*
Cold rolled steel strip, 20 gage	16	0			3.47	

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron: (a)							
Belgium	£3	2s.	to £3	3s.	$15.07	to	$15.31
France	3	2	to 3	3	15.07	to	15.31
Luxemburg	3	2	to 3	3	15.07	to	15.31
Basic pig iron: (a)							
Belgium	3	1	to 3	2	14.82	to	15.07
France	3	1	to 3	2	14.82	to	15.07
Luxemburg	3	1	to 3	2	14.82	to	15.07
Billets:							
Belgium	4	17½			23.69		
France	4	17½			23.69		
Merchant bars:					C. per Lb.		
Belgium	5	9			1.18		
Luxemburg	5	9			1.18		
France	5	9			1.18		
Joists (beams):							
Belgium	5	5			1.14		
Luxemburg	5	5			1.14		
France	5	5			1.14		
Angles:							
Belgium	5	18½	to 6	0	1.28	to	1.30
⅛-in. plates:							
Belgium	6	10			1.41		
Germany	6	10			1.41		
3/16-in. ship plates:							
Luxemburg	6	10			1.41		
Belgium	6	10			1.41		

(a) Nominal.

as imperative a substantial reduction in freight rates. He advocates a cut of 25 per cent, and to make this possible it would be necessary for the railroad companies to be assured of substantial relief in their own expenditures on wages, coal and other main items.

The reversion to an 8-hr. day in the mines and the abandonment of the present three-shift system in favor of the former two-shift system in the steel trade would, he said, mean a return of prosperity, necessitating putting into operation many idle blast furnaces with a consequent increased demand for coal. It would mean cheapening coal by about 5s. per ton and a reduction in the cost of steel by approximately 7s. per ton—changes that would permit manufacturers to recapture the home markets and much of that export trade which has been lost in the past few years.

The scheme of reconstruction of Industrial Steels, Sheffield, has been carried into effect. The new board of directors includes Viscount Falmouth as chairman, Maj. John Gregg, M. Webster Jenkinson and A. B. Winder. Mr. Winder, a director and works manager of the old company, will be general manager.

FRENCH TRADE IMPROVES

Easing of Money Strain Helps Iron and Steel Business—Pig Iron Output Gains

PARIS, FRANCE, July 10.—In spite of and perhaps because of, the high rate of exchange, the iron and steel trade has been more active and export prices have shown a firmer tendency. The Caillaux financial program has impressed manufacturers favorably and it is thought that putting 6,000,000,000 bank notes at the disposal of business men cannot but ease the credit strain and release orders which have been held back on that account.

Coke.—During the first eight days of July the ORCA received from the Ruhr 55,700 tons of reparation coke, i.e., a daily average of 6960 tons.

Pig Iron.—Contrary to the general opinion pig iron production increased in May. Now that a producers' syndicate has virtually materialized, the volume of orders has increased somewhat. Export business has improved because of exchange rates, but Belgian producers have accepted even lower prices than those recently in force, i. e., 325 to 335 fr. ($15.28 to $15.75) f.o.b. Antwerp and French iron makers must follow suit. Orders have been accepted from Italy and Switzerland at slightly lower prices caused by large stocks at furnaces. The average price holds at 420 to 430 fr. ($19.74 to $20.21) at works. At the present rate of sterling little British hematite can get into France.

Ferroalloys.—Ferromanganese has risen to 1,750 fr. ($82.25); the 200 fr. increase since June being due to sterling fluctuations.

Semi-Finished Products.—Export orders are more frequent than domestic business, though inquiries in Antwerp are little better than in Lorraine. British offers are too low to be of interest. French billets are being sold 15 to 20s. less than British for export. Blooms have lost ground at £4 13s. 6d. ($22.68) while billets are quoted at £4 18s. 6d. to £5 ($23.88 to $24.30).

Rolled Steels.—Export orders have picked up a little but prices, when figured in sterling, have declined. The low level on bars has been £5 9s., equal to 560 fr. (1.17c. per lb) but this is exceptional. An average rate would be about £5 10s. Belgian bars are offered at £5 9s. to £5 10s. and Luxemburg the same. French makers quote beams at £5 4s. to £5 5s., equal to 535 to 540 fr. (1.12 to 1.13c. per lb.).

Rails.—The most recent large order for the Egyptian roads has gone chiefly to a group of Meurthe-et-Moselle works and sizeable inquiry from Siam will probably go either to two large Lorraine works or to a leading Franco-Belgian firm. Prices vary from £5 18s. to £9 (1.27 to 1.95c. per lb.) f.o.b. works, the c.i.f. rates corresponding to £7 3s. 3d. to £11 15s.

Sheets.—Business with regard to large flats and heavy sheets is dull; deliveries are made in two weeks. On lighter gages the demand is better and some rolling mills require three and four months for deliveries. Prices are as follows: Large flats (30 to 50 tons) 68 to 75 fr. ($3.19 to $3.52) per 100 kg.; heavy sheets, (50 to 100 tons), 70 to 75 fr. ($3.29 to $3.52); medium sheets (25 to 30 tons), 84 to 89 fr. ($3.95 to $4.18); light sheets (25 to 30 tons), 103 to 108 fr. ($4.84 to $5.07). Export prices have declined to £6 9s. to £6 10s., i.e., 665 to 670 fr., f.o.b. Antwerp (1.40 to 1.41c. per lb.).

Wire Products.—Domestic business is dull but export orders are much better. Certain mills are out of the market having disposed, for some time, of their production. The average price for wire rods is not improved at £5 12s. to £5 13s. (1.20 to 1.22c. per lb.).

STRIKE HURTS BELGIANS

75,000 Men Out in Metal-Working Plants—May Become General

ANTWERP, BELGIUM, July 11.—The market is dull. The strikes in the districts of Charleroi and the Centre are spreading over other parts of the country. Many iron and steel foundries are closed down. Nail manufacturers will shortly be affected; demands have been made which must be settled by July 16. As far as is known no agreement has been made up to the moment and employers are firm for lower wages. It is possible that the strike will affect all metal-working plants by the end of next week.

Of 56 blast furnaces in Belgium only 32 are actually working, the others having ceased operations on account of the strike. The number of strikers amounts to about 75,000.

The steel market is paralyzed by the strike. Rolling mills and fabricators have practically ceased to purchase. On the other hand, orders from abroad are more scarce and the little business available is strongly competed for not only by Belgian makers but especially by the Luxemburg and French plants, who are also very short of work.

Foreign exchange is still high. This, in reality, means lower prices for export business since quotations are always made in foreign moneys, especially dollars and sterling. Such facts show the depression in the Belgian market.

Steel.—Merchant steel makers are chiefly located in districts where the strike is in force and in consequence the market is dull. On the other hand, the lowered value of the franc means higher costs for raw materials, etc. Orders from abroad for bars are scarce and domestic business simply does not exist. Beams are not much better. In the absence of regular business prices as given are only nominal:

		Per Lb.
Bars	£5.10.0 or $26.75	or 1.19c.
Beams	5. 5.0 or 25.25	or 1.13c.
Rods	6. 0.0 or 29.00	or 1.29c.
Corrugated bars	6. 2.6 or 29.75	or 1.30c.
Wire rods	5.15.0 or 28.00	or 1.25c.
Steel hoops	Frs. 740 or 34.60	or 1.54c.
Drawn steel, squares		41.40 or 1.85c.
Drawn steel, rounds		40.00 or 1.79c.
Drawn steel, hexagons		44.60 or 1.99c.
Spring steel		45.60 or 2.04c.
Rails		26.80

Sheets.—Prices for thin sheets maintain their previous level, and are even somewhat higher (figured in francs) on account of the higher rate for sterling. German competition on heavy sheets is stronger.

Prices are nominally as follows:

Bessemer sheets—		Per Lb.
5/10 mm. (No. 26 gage)	£11.10.0 or $56.00	or 2.50c.
1 mm. (No. 20 gage)	9.17.6 or 48.00	or 2.14c.
2 mm. (No. 14 gage)	8.10.0 or 41.30	or 1.84c.
3 mm. (No. 11½ gage)	7. 2.6 or 34.50	or 1.53c.
5 mm. (No. 6½ gage)	6.11.6 or 31.75	or 1.42c.

Iron.—Business is very limited. Notwithstanding that production has been greatly reduced by the strike

no better prices can be obtained. Ordinary quality is quoted 112s. 6d. equalling $27.50, with $34 for the No. 4 grade which, as usual, is rather scarce.

Blooms, Billets and Slabs.—Domestic purchases have been much smaller. Luxemburg makers appeared in the market and quoted at the Belgian level in order to get domestic business. Nevertheless, prices are still higher than offers from English buyers.

Quotations are approximately:

Ingots	£3.18.0 or $19.00
Blooms	4.12.0 or 22.30
Billets	4.15.0 or 23.00
Slabs	5. 0.0 or 24.30

Pig Iron.—Prices for pig iron are again lower. The going price for phosphoric foundry No. 3 with 2.50 to 3 per cent Sil is 325 fr., with a maximum of 330 fr., i.e., $15.40 f.o.b. Antwerp, per metric ton. These prices are generally accepted by Luxemburg and French makers. Belgian producers have up to now maintained the prices of 330 fr. and 340 fr.

Thomas steel pig iron is not available; the strike affected the largest producers of this quality of pigs. The price is about 330 fr. ($15.40).

Prices for English hematite iron remain weak. Belgian and German makers get the largest part of orders for ordinary hematite at lower prices than can be done on English east coast iron.

Coke.—The coke market is also, naturally, depressed. Sales are small and stocks are increasing. Prices are nominally:

	Frs.
Ordinary	105 or $4.90
Half washed	125 or 5.85
Washed	140 or 6.55

A reduction could easily be obtained in the case of large purchases.

Steel Foundries Operate at 48.2 Per Cent of Capacity

WASHINGTON, July 20.—The Department of Commerce announces June bookings of steel castings, based on reports from principal manufacturers, representing over two-thirds of the commercial-castings capacity of the United States, as 48,413 tons, or 48.2 per cent of shop capacity, as against 49,619 tons in May, or 49.4 per cent of shop capacity.

The following table shows the bookings of commercial steel castings for the past six months by 68 identical companies, with a monthly capacity of 100,400 tons.

	Total		Railroad Specialties		Miscellaneous Castings	
1925	Net Tons	Per Cent of Capacity	Net Tons	Per Cent of Capacity	Net Tons	Per Cent of Capacity
Jan.	82,922	82.6	40,799	94.9	42,123	73.4
Feb.	61,535	61.3	27,237	63.3	34,298	59.8
March	59,508	59.3	21,670	50.4	37,838	65.9
April	59,008	58.8	22,109	51.4	36,899	64.3
May	49,619	49.4	16,055	37.3	33,564	58.5
June	48,413	48.2	16,675	38.8	31,738	55.3
Total (6 mos.)	361,005		144,545		216,460	

Tin Plate Scrap Rate Cut

WASHINGTON, July 21.—In a decision announced today the Interstate Commerce Commission held that the rate of $3.15 per gross ton on tin plate scrap on shipments in April, 1922, from Baltimore stations to Carteret, N. J., was unreasonable to the extent it exceeded $2.75 prior to July 1, 1922, and that it will be unreasonable to the extent that it exceeds $2.475 in the future. The complainant was the Metal & Thermit Corporation, Carteret.

Reorganization Is Planned for Hydraulic Steel Co.

Plans for revamping the Hydraulic Steel Co., Cleveland, have been approved by the reorganization committee of which Walter C. Janney, Philadelphia, is chairman and by the bank creditors' and merchandise creditors' committees. No action has yet been taken by the preferred stockholders' committee. The plan provides for forming a holding company to acquire from the reorganization committee the assets recovered from the sales of the two Cleveland plants. Creditors would receive pro rata cash, five-year notes equal to the face amount of the balance of their claims together with one share of common stock for each $100 of the original amount of the claim. Preferred stockholders would receive one share of common stock for each share of old preferred and would be given the right to subscribe to additional common stock at $10 per share. The common stock equity has been wiped out.

It is planned to ask a court order for the sale of the property in receivership and for its purchase by the reorganization committee. The committee has received an offer for the sale of the West Side plant from H. W. Kranz and associates, who have been managing executives of the plant. They propose to form an Ohio corporation and pay $250,000 in cash with a certain amount of stock for the property, as well as making other adjustments. No offer has yet been made for the East Side plant but the formation of a separate corporation to take over that plant is proposed. The holding company would be capitalized with $3,000,000 in five year notes and 100,000 shares of no par common stock.

French Production for May

PARIS, FRANCE, July 4.—On June 1, of 220 existing blast furnaces, 141 were in blast, 32 blown out, 47 either being constructed or in repair, the corresponding figures for May 1 were respectively 139, 33 and 48.

Pig Iron.—Production in May amounted to 706,264 tons, i. e., 22,800 tons daily, as against 686,130 tons, a daily average of 22,800 also in April. The pig iron production included 140,030 tons of foundry iron (138,154 in April) and 507,659 tons of basic iron (493,036 tons in April).

Raw Steel.—The total amount of steel produced in May was 596,309 tons (including 584,071 tons ingots and 12,216 tons castings), i. e., a daily mean of 19,200 tons; as against 586,977 tons in April (daily average output 19,600 tons). The May production included 414,344 tons basic steel and 167,971 tons open-hearth steel; the corresponding figures for April were 400,396 and 174,243 tons.

Denial of Cooperation by French and German Pipe Foundries

In THE IRON AGE of June 11, p. 1722, the statement was made that "according to New York importers familiar with recent developments" the Société Anonyme des Hauts Furneaux et Fonderies de Pont-a-Mousson, Nancy, France, "is a member of a syndicate which includes, in addition to the German company, Gelsenkirchener Bergwerks, a maker of cast iron pipe, several smaller producers in Germany, France and Belgium." THE IRON AGE is advised by the Société Pont-a-Mousson that the above statement is incorrect and that it has no connection or agreement of any sort with the Gelsenkirchen pipe foundry. The Nancy company further avers that Gelsenkirchen and Pont-a-Mousson are competing throughout the world continuously and recently met in sharp competition at Cairo, Egypt, on a contract involving about 12,000 tons of 46-in. pipe on which Pont-a-Mousson was the successful bidder. The two companies were also in competition this week on pipe for the Department of Water Supply, Gas and Electricity, New York, as referred to on p. 240.

JUNE STRUCTURAL SALES

Bookings 27½ Per Cent Over Those of May

WASHINGTON, July 21.—Showing a substantial gain over May, sales of fabricated structural steel for June represented 88 per cent of capacity, based on total booking of 216,759 tons reported by 173 firms of fabricators with a capacity of 247,640 tons, according to a statement issued today by the Bureau of the Census. Bookings in May reported by 192 firms with a capacity of 254,880 tons amounted to 176,722 tons or 69 per cent of capacity. Computed tonnage for June was 255,200 against 200,100 in May.

Shipments in June represented 79 per cent of capacity, the computed tonnage being 229,100, against 78 per cent in May, when the computed tonnage was 226,200.

The computed tonnage booked for the fiscal year ended with June, 1925, amounted to 1,212,200 tons as against 1,148,400 tons for the fiscal year 1924 and 1,212,100 tons for the fiscal year 1923.

Awards Total About 26,500 Tons, While New Projects Are 46,500 Tons

Although the week's awards of structural steel are not large, as measured by the rate of lettings during June, the total was 26,500 tons, which is a fairly good average. New projects total 46,500 tons, this being a higher figure than is ordinarily reported, being swelled by 12,000 tons for subway work in Philadelphia. There is only one other project of size, that being a hotel in New York, requiring 6000 tons. Subway work in New York, amounting to 6300 tons, was the largest award. The awards include:

Paterno apartment building, Riverside Drive at 101st Street, New York, 2500 tons, to Bethlehem Fabricators, Inc.

Philadelphia Consistory, Scottish Rite Masons, club building in Philadelphia, 2100 tons, to Shoemaker Bridge Co. First reported as awarded to McClintic-Marshall Co.

Garage, Philadelphia, 150 tons, to McClintic-Marshall Co.

Baldwin Locomotive Works, Eddystone, Pa., shop building, 300 tons, to McClintic-Marshall Co. This is in addition to building of similar size recently awarded to the McClintic-Marshall Co.

Metropolitan Edison Co., Middletown, Pa., plant extension, 200 tons, to Belmont Iron Works.

Boiler house, Livingston, Long Island, N. Y., 450 tons, to Phoenix Bridge Co.

Fifth Avenue Hotel Corporation, hotel at Fifth Avenue and Ninth Street, New York, 1000 tons, to Taylor-Fichter Steel Construction Co.

Manufacturing building, Trenton, N. J., 200 tons, to American Bridge Co.

Woolen mill building, Pittsfield, Mass., 175 tons, to American Bridge Co.

Colgate University, Hamilton, N. Y., recitation building, 250 tons, to an unnamed fabricator.

Rutland Railroad, bridge, 250 tons, to Fort Pitt Bridge Co.

Standard Oil Co. of Louisiana, oil tanks, 450 tons, to a Louisiana fabricator.

New York City, section No. 6 of subways, under St. Nicholas Avenue, 6300 tons, to American Bridge Co.

Columbus School, New Rochelle, N. Y., 500 tons, to Hedden Iron Construction Co.

Storage and machine shop, Willimansett, Mass., 270 tons, to Palmer Steel Co.

First Methodist Church, Uniontown, Pa., 100 tons, to Jones & Laughlin Steel Corporation.

Gilmore Drug Co., Pittsburgh, building, 3500 tons, to McClintic-Marshall Co.

Manos Theater, Greensburg, Pa., 300 tons, to Pittsburgh-Des Moines Steel Co.

H. J. Heinz Co., Pittsburgh, 450 tons, general contract to Hughes-Foulkrod Co.

Professional Building, Pittsburgh, for Fullaytar Realty Co., 700 tons, general contract to Henry Shenk Co.

Home for Insane, Woodville, Pa., 225 tons, to Guibert Steel Co.

Uptown Peoples Church, Chicago, 670 tons; Olivet Institute, Chicago, 100 tons, and sub-station for Commonwealth Edison Co., Dearborn and Ontario Streets, 100 tons, all to Wendnagel & Co.

National Lock Co., Rockford, Ill., power house, 300 tons; Line Materials Co., South Milwaukee, plant addition, 175 tons; Olinger Building, Milwaukee, 125 tons, all to Worden-Allen Co.

State Bank & Trust Co. Building, Evanston, Ill., 420 tons, to Hansell-Elcock Co.

Thirty-first Street viaduct, Chicago, 1500 tons, to American Bridge Co.

Commonwealth Edison Co., Chicago, Kenwood sub-station, 140 tons, to Hansell-Elcock Co.

Municipal service building, Milwaukee, 850 tons, to Milwaukee Bridge Co.

Mission High School, Eighteenth and Dolores Streets, San Francisco, 850 tons, to Pacific Rolling Mill Co.

Theater, Fruitvale Avenue and Hopkins Street, Oakland, Cal., 175 tons, to Golden Gate Iron Works.

Two bridges, Sacramento County, Cal., 150 tons, to Pacific Coast Engineering Co.

Haywood High School, Haywood, Cal., 100 tons, to Pacific Coast Engineering Co.

Apartment house, Broadway near Fillmore Street, San Francisco, 175 tons, to Central Iron Works.

Barge, General Petroleum Co., Oakland, 350 tons, to Bethlehem Shipbuilding Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

City of Philadelphia, Broad Street subway, third section, 12,000 tons; bids close Aug. 18.

Edison Portland Cement Co., Stewartsville, N. J., plant addition, 350 tons.

State of South Carolina, office building at Columbia, 700 tons.

Apartment building, Fifth Avenue and 102nd Street, New York, 850 tons.

Apartment building, East Fifty-fifth Street, New York, 650 tons.

Barclay Hotel, Lexington Avenue, Forty-eighth to Forty-ninth Street, New York, 6000 tons.

Community Temple, Brooklyn, 4000 tons.

Apartment building, 147 West Seventy-ninth Street, New York, 700 tons.

Travelers Insurance Co., building at Hartford, Conn., 500 tons.

Fred T. Ley & Co., office building at Madison Avenue and Forty-fourth Street, New York, 600 tons.

Aeolian Hall, Fifth Avenue at Fifty-fourth Street, New York, 1000 tons.

Apartment building, 54 East Fifty-fourth Street, New York, 700 tons.

Apartment building, East Seventy-ninth Street, New York, 500 tons.

Highway bridge, Philadelphia, 250 tons.

Frederick Loeser & Co., Brooklyn, manufacturing building, 250 tons.

Philadelphia General Hospital, Philadelphia, 2500 tons.

Oil City National Bank Building, Oil City, Pa., 450 tons.

American Security & Trust Co., Cincinnati, newspaper and office building, 3200 tons; bids opened July 20.

Steel girder span at Mead and Marquette Streets, Racine, Wis., 200 tons, bids close July 25; Wisconsin Bridge & Iron Co., Milwaukee, consulting engineer, J. Beauregrand, city engineer.

Bascule bridge over Government canal at Menasha, Wis., 300 tons; plans in progress, bids about Aug. 15.

One Hundredth Street bridge, Chicago, 1400 tons, American Bridge Co., low bidder.

Adams Street bridge, Chicago, 2300 tons; bids close Aug. 1.

Pumping station, city of Chicago, 600 tons; bids close July 22.

Hudson Motor Car Co., Detroit, press shop addition, 700 tons.

Michigan Central freight house, Detroit, 140 tons.

Shrine Temple, Des Moines, Iowa, 900 tons; bids close Aug. 3.

A. H. Blank, Omaha, Neb., moving picture theater, 400 tons.

Reynolds Building, Jackson, Mich., 500 tons.

Morse Avenue Garage, Chicago, 180 tons.

Mercantile Trust Co., Berkeley, Cal., 880 tons; Moore Dry Dock Co., low bidder.

Apartment house, Jackson and Laguna Streets, San Francisco, 110 tons; Judson Mfg. Co. low bidder.

Lima Trust Co., Lima, Ohio, bank building, 1000 tons.

Railroad bridge at Sims Point, La., 1700 tons.

Iron and Steel Markets

BETTER OPERATION

July Steel Production 50 Per Cent Above Last Year's

Current Buying More Satisfactory Than Prices but Strength Gathering in Scrap

Pittsburgh district mills have had a larger volume of orders in the past week and there is a slightly increased operation in the industry as a whole. Indications now are that the July rate will show an average a little above 60 per cent of capacity, whereas July, 1924, fell to 41.5 per cent.

Some resemblance to the pick-up that came in August last year is seen in railroad demand, though thus far there is only a beginning in rails and track supplies, whereas one year ago there was considerable figuring in pre-election car orders.

The Norfolk & Western has just given 27,000 tons of its rail order to the Steel Corporation and 20,000 tons to Bethlehem. The Great Northern is expected to buy 25,000 to 30,000 tons, and the International Railway of Central America has taken 2300 tons. There is the probability also of an early contract from a large trunk line.

With the close approach of steel production in the past six months to second place among records, the extent of the buying this month is taken to indicate that a high percentage of first half production has gone into consumption. That in part is the basis for the general expectation of increased buying in the next two months.

As was the case in June, the current rate of operations and of new business is more satisfactory than the prices realized. Chicago reports concessions in the heavier products—plates, shapes and bars—also that sheets and cold-rolled strip, which recently showed more stability, are substantially back in their position of early June.

At Pittsburgh the volume of sheet demand is encouraging. The independent producers made sales in June in excess of both production and shipments, last month being the first since December to make such a showing. The American Sheet & Tin Plate Co. had larger sheet orders and specifications last week than in any week since early February.

The strength of the old material market is getting more emphasis in the search for evidence of a turn in the general steel situation. A Pittsburgh steel company has closed for about 20,000 tons of high-grade heavy melting steel at $19, and there are other indications that prices there are coming in line with the stronger situation in other consuming centers.

In foundry pig iron buying by smaller consumers continues, coming in the wake of the large contracts of May and early June, but with no definite change in prices. The largest transaction of the week was in basic iron. An Ohio River steel company which inquired for 30,000 tons is reported to have bought upward of 50,000 tons.

Included in 46,500 tons of pending structural steel projects is 12,000 tons for subway work in Philadelphia, while a hotel in New York calls for 6000 tons. This week's largest award was 6300 tons for subway work in New York.

June showed a substantial gain over May in bookings of fabricated steel, the total being 216,000 tons, against 176,000 tons. In the fiscal year ended with June, the fabricating companies took contracts amounting to 1,212,000 tons, as compared with 1,148,000 tons in the previous year.

Following a reduction in its working forces of about 25 per cent, an eastern Pennsylvania manufacturer of plates has posted notice of a wage adjustment effective Aug. 1. The average of the reduction is not stated. The company's rate for common labor has been 32 cents an hour for a 10-hour day.

Sheet consumption has been notably large for months. As a single example, production of steel barrels in the first half of this year ran 35 per cent more than for the same period last year. Shipments were ahead of production, and unfilled orders on July 1 totaled about 850,000 barrels, against 3,000,000 made in the first half.

An important German pipe foundry, Gelsenkirchen, has set out to get American business, being low bidder this week on nearly three-fourths of the 6000 tons of pipe the city of New York is buying. On the second opening of bids on 2200 tons of 30-in. pipe for the Panama Canal, the French foundry, Pont-a-Mousson, that has been so active in this market for a year or more, again named the lowest figure—$47 a ton, delivered.

THE IRON AGE composite steel price is now 2.439c. per lb., or 30c. a ton higher than one month ago, when the low point of the year was reached.

The pig iron composite remains at $18.96, to which it fell July 7.

Pittsburgh

Week's Steel Bookings Large and Broad in Scope

PITTSBURGH, July 21.—Sentiment has grown more cheerful in the iron and steel trade here since a week ago, as business with almost all companies and in almost all lines has been of heavier volume. One company reported its bookings of the past week as the best of any week in the past two months. Sheet orders and specifications of the American Sheet & Tin Plate Co. in the past week were the heaviest of any week since the fore part of February. Tin plate consumers now are trying to get the manufacturers to anticipate shipments against contracts. A year ago the container manufacturers took out tin plate with much freedom only to have large quantities left on their hands because the packing crops were below expectations. This has made for cautious specifying this year and now that large yields are practically assured, they want more tin plate than the mills can turn out within the desired time.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	July 21, 1925	July 14, 1925	June 23, 1925	July 22, 1924
No. 2X, Philadelphia‡	$21.26	$21.26	$21.26	$21.26
No. 2, Valley furnace†	18.50	18.50	18.50	19.00
No. 2, Southern, Cin'ti†	22.05	22.05	22.55	22.05
No. 2, Birmingham, Ala.†	18.00	18.00	19.00	18.00
No. 2 foundry, Chicago*	20.50	20.50	20.50	19.50
Basic, del'd, eastern Pa.	21.50	21.50	21.50	20.00
Basic, Valley furnace	18.00	18.00	18.00	19.00
Valley Bessemer del. P'gh	20.76	20.76	20.76	21.76
Malleable, Chicago*	20.50	20.50	20.50	19.50
Malleable, Valley	18.50	18.50	18.50	19.00
Gray forge, Pittsburgh	19.76	19.76	19.76	20.26
L. S. charcoal, Chicago	29.04	29.04	29.04	29.04
Ferromanganese, furnace	115.00	115.00	115.00	105.00
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	35.00	35.00	35.00	38.00
O.-h. billets, Pittsburgh	35.00	35.00	35.00	38.00
O.-h. sheet bars, P'gh	35.00	35.00	35.00	38.00
Forging billets, base, P'gh	40.00	40.00	40.00	43.00
O.-h. billets, Phila	40.30	40.30	40.30	43.17
Wire rods, Pittsburgh	45.00	45.00	45.00	48.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	2.15
Light rails at mill	*1.60*	1.70	1.70	1.90
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.42
Iron bars, Chicago	*1.95*	2.00	2.00	2.20
Steel bars, Pittsburgh	2.00	2.00	2.00	2.15
Steel bars, Chicago	2.10	2.10	2.10	2.15
Steel bars, New York	2.34	2.34	2.34	2.49
Tank plates, Pittsburgh	1.90	1.90	1.90	2.00
Tank plates, Chicago	2.10	2.10	2.14	2.25
Tank plates, New York	2.14	2.14	2.14	2.14
Beams, Pittsburgh	2.00	2.00	2.00	2.00
Beams, Chicago	2.10	2.10	2.20	2.25
Beams, New York	2.34	2.34	2.34	2.34
Steel hoops, Pittsburgh	2.40	2.40	2.40	2.60

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	July 21, 1925	July 14, 1925	June 23, 1925	July 22, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	**3.15**	3.10	3.10	3.40
Sheets, black, No. 28, Chicago dist. mill	3.30	3.30	3.20	...
Sheets, galv., No. 28, P'gh	4.20	4.20	4.15	4.50
Sheets, galv., No. 28, Chicago dist. mill	*4.30*	4.35	4.25	...
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.30	2.60
Sheets, blue, 9 & 10, Chicago dist. mill	*2.40*	2.45	2.35	...
Wire nails, Pittsburgh	2.65	2.65	2.65	2.85
Wire nails, Chicago dist. mill	2.70	2.70	2.70	...
Plain wire, Pittsburgh	2.50	2.50	2.45	2.60
Plain wire, Chicago dist. mill	2.55	2.55	2.55	...
Barbed wire, galv., P'gh	3.35	3.35	3.40	3.55
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.55	...
Tin plate, 100 lb. box, P'gh	$5.50	$5.50	$5.50	$5.50
Old Material Per Gross Ton:				
Carwheels, Chicago	$17.00	$17.00	$17.25	$16.50
Carwheels, Philadelphia	17.00	17.00	17.00	17.50
Heavy steel scrap, P'gh	**18.50**	17.50	17.50	18.00
Heavy steel scrap, Phila.	15.50	15.50	15.50	15.50
Heavy steel scrap, Ch'go	**16.00**	15.50	15.50	15.25
No. 1 cast, Pittsburgh	17.00	17.00	17.00	18.00
No. 1 cast, Philadelphia	17.50	17.50	17.50	17.00
No. 1 cast, Ch'go (net ton)	17.50	17.50	17.50	17.00
No. 1 RR. wrot, Phila.	17.50	17.50	18.50	18.00
No. 1 RR. wrot, Ch'go (net)	**14.25**	14.00	14.50	13.00
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	**$2.90**	$2.75	$2.75	$3.00
Foundry coke, prompt	3.75	3.75	3.75	4.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	**14.37½**	14.25	13.75	12.87½
Electrolytic copper, refinery	**14.12½**	14.00	13.50	12.50
Zinc, St. Louis	**7.25**	7.17½	7.00	5.92½
Zinc, New York	**7.60**	7.52½	7.35	6.27½
Lead, St. Louis	8.00	8.00	7.90	6.85
Lead, New York	8.35	8.35	8.25	7.10
Tin (Straits), New York	**58.50**	58.25	56.50	48.75
Antimony (Asiatic), N. Y.	16.50	16.50	16.50	8.37½

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

THE IRON AGE Composite Prices

July 21, 1925, Finished Steel, 2.439c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.	One week ago,	2.431c.
	One month ago,	2.424c.
	One year ago,	2.524c.
	10-year pre-war average,	1.689c.

July 21, 1925, Pig Iron, $18.96 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.	One week ago,	$18.96
	One month ago,	19.13
	One year ago,	19.29
	10-year pre-war average,	15.72

High				Low			
1923	1924	1925		1925	1924	1923	
2.824c., April 24	2.789c., Jan. 15	2.560c., Jan. 6	**Finished Steel**	2.424c., June 23	2.460c., Oct. 14	2.446c., Jan. 2	
$30.86, March 20	$22.88, Feb. 26	$22.50, Jan. 13	**Pig Iron**	$18.96, July 7	$19.21, Nov. 3	$20.77, Nov. 20	

The pipe market also maintains a high rate of activity and with orders for most other finished products at least more numerous than they were recently, the trade has some reason for taking a more hopeful view. There is also the factor of the desire of investors to get structural projects well along before cold weather arrives and the immediate prospect for structural steel is thereby brightened. There is considerably more talk of railroad buying of rolling stock and as the crop prospects and prices are favorable, the idea is strengthened that the agricultural implement industry will take some very sizable tonnages of steel over the remainder of the year.

Meanwhile, manufacturers have been reasonably successful in stabilizing prices of those products which during the second quarter developed most pronounced weakness. There is no thought that higher prices are right ahead, nor that consumers of steel will immediately abandon a policy of buying frequently and in keeping with their known requirements, but the belief is pretty general that producing costs will tend to check price cutting and that as the big production of the first half of the year has pretty well gone to consumption, stocks must be low in second hands and purchases necessarily must be larger as the fall approaches.

The pig iron market has ruled very quiet so far as new business is concerned, but there is not much doubt that the statistical position of the market has grown stronger as shipments are running ahead of production and constant inroads are being made upon furnace yard stocks. Another bullish factor in the pig iron market is the fact that the furnace coke situation has been strengthened by curtailment of beehive oven production to the basis of current contract requirements, this being attended by an advance of about 15c. a ton in the price of furnace coke.

A substantial tonnage of heavy melting steel was closed today at $19, delivered by a Pittsburgh district consumer taking only No. 1 railroad steel or its equivalent. This represents an advance of about $1 a ton over last week's price, as until this sale was made $18 represented the limit even on high grade heavy steel scrap. Dealers have paid as high as $18.75 for tonnages to deliver against this $19 sale.

There has been practically no change in the rate of production of iron and steel in this and nearby districts in the past week, but with a heavier volume in finished steel business, the tendency of production is upward.

Pig Iron.—So many of the large consumers of iron are covered against their requirements over the present and fourth quarters that demand now is entirely from small consumers and sales run chiefly to small tonnages. Prices, however, are holding reasonably well considering the size of the demand. Occasional deviations are noted from $18.50 for No. 2 foundry iron at Valley furnace, the ordinary quotation on this grade, but usually it is found in a waiver of silicon differentials rather than an out and out cut in the price. Makers often find that they have iron of an analysis that fits the specifications of some consumer and are glad to make a special price to make a sale. Sales of iron at $18.50, however, continue to be made and producers as a rule seem indisposed to consider less, since they are moving more iron than they are making and this means a reduction in their large stocks. There is no interest whatever in basic iron and quotations merely are asking prices. Small lots of Bessemer iron are moving at $19, Valley furnace, or $20.76, delivered Pittsburgh.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$18.00
Bessemer	19.00
Gray forge	18.00
No. 2 foundry	18.50
No. 3 foundry	18.00
Malleable	18.50
Low phosphorus, copper free	$27.75 to 28.00

Ferroalloys.—There is a good inquiry for ferromanganese from consumers outside rather than within the Pittsburgh district, some of them running to as much as 500 tons, but the buying is for early delivery, in contrast with the usual contracting for requirements covering three or six months. Steel business is looking up, but makers want to be sure that the improvement is permanent before buying their raw materials very far ahead. The price is holding well at $115, Atlantic seaboard. Consumers of spiegeleisen still are covering against their requirements for the remainder of the year and doing so at favorable prices. Open market activity in 50 per cent ferrosilicon is very restricted. Prices are given on page 249.

Semi-Finished Steel.—The best price appraisal on billets, slabs and sheet bars is $35, Pittsburgh or Youngstown, for rollings to analysis, for while that price has been and probably again would be shaded on billets and slabs, the concession would be expected on off heats or on stocked steel, which might not fit exactly with consumers' specifications. There is very little open market activity, but the curtailment of production has brought about a better balance between supply and demand and few makers now have any surplus beyond the requirements of contract customers. The market may now be regarded as well established at $35 for these forms of steel. There is a freer movement of wire rods than there was at the outset of the month and $45, base, Pittsburgh or Cleveland, is well established. Skelp is slow outside of the movement on contracts and no difficulty is experienced in obtaining it at 1.90c. Ingot production gained slightly last week, in keeping with larger finished steel sales. One company which for several weeks has had to shut down Thursday or Friday each week for the past month or so in the lack of sufficient orders was active all of last week. Prices are given on page 249.

Wire Products.—Price stability is counting strongly on the side of more confident buying. The past week, while lacking in large forward orders, has brought a substantial gain in the number and total volume of early delivery bookings as compared with the previous week, and manufacturers are encouraged to believe that the market has finally made a turn. Sentiment among distributors has improved, particularly in the Central West, where there now appears to be assurance of good crops at fairly high prices, with the attendant idea of greater buying power among the farmers. Suggestions that nails can be bought at less than $2.65, base, per keg, Pittsburgh, or plain wire at less than $2.50, base, per 100 lb., are rarely encountered, according to local manufacturers. Prices are given on page 248.

Tin Plate.—Now that it is apparent that the packing crops will yield high, packers are pressing for delivery of containers and manufacturers of the latter are urging shipment of tin plate. Many cases are noted where the effort is being made to secure, in the next 45 days, deliveries against September quotas. The market is really active and it looks as if there would be a scramble for early shipments with some heavy sales of stock items in the efforts of the container manufacturers to insure themselves of sufficient supplies against the probable demands of the next few months. Timely rains saved the pea crop in Wisconsin and materially changed the complexion of the prospect in other growing areas and there is now little doubt but that the pack will be heavy of almost all fruits and vegetables. One case is noted where a can company suspended shipment against a large quantity of tin plate for July delivery only to ask for a corresponding increase in its August quota.

Sheets.—It may be that black sheets can be bought at a price that will figure back to 3.10c., base, but as a general proposition that price no longer is acceptable to makers on ordinary tonnages and the market appears well established at 3.15c., base. Similarly, in galvanized sheets, it takes something out of the ordinary in orders to win a concession from 4.20c. In these grades, there is a degree of firmness that was lacking over much of the first half of the year and in blue annealed sheets, mills willing to go below 2.30c., base, are fewer than they were recently. With some evidence that the market has struck a bottom, there has been more confidence among consumers and buying has been heavier. For the second week running, the American Sheet & Tin Plate Co., reports its orders and specifications for the past week to have been the largest since the fore part of February. Independent companies also find sales running larger. As yet there is little or no forward buying, but that is not disturbing, since bookings are frequent enough to sustain a comparatively good rate of mill operations and order books are much stouter than they were at this time last year. Prices are given on page 248.

Tubular Goods.—Pipe has long stood out as an active spot in a comparatively dull market and in point of activity it still is conspicuous, despite the recent improvement in other finished products. Demand for standard pipe is increasing and stocks accumulated when there was less activity are being drawn upon freely and are becoming much broken up. The satisfactory oil situation is reflected in growing demands for oil well goods and the necessity of tieing up producing fields with refineries is bringing out line pipe business. The Empire Gas & Fuel Co. has closed for 60 miles of 12-in. pipe for a line in Kansas, 25 miles going to the Wheeling Steel Corporation and the remainder to the leading producer. It is estimated that 85 per cent of steel pipe capacity of this and nearby districts is now engaged. Boiler tube business is steady, but no tax upon the capacity, and the demand for mechanical tubing holds up remarkably well. Discounts are given on page 248.

Cold-Finished Steel Bars and Shafting.—Business is better and while it is not good, makers are encouraged to expect improvement by the fact that already there have been a few requests for fourth quarter protection. In view of the fact that all third quarter contract business came only through solicitation, it is figured that some buyers believe that prices are as low as they are going to be over the remainder of the year. On ordinary tonnages of screw stock bars, the market still is quotable at 2.60c., base Pittsburgh, and is firmer at that level than it was recently when some business was taken at 2.50c.

Structural Steel.—Fabricating shops in this district have had one of the best weeks of the year with awards totaling about 5300 tons. Evidently, investors are desirous of having construction under way before winter, as in addition to the business closed, projects embracing about 8500 tons of steel have reached the pending stage. The plain material market is more active and so far as deliveries within the Pittsburgh district are concerned 2c., base Pittsburgh, is well observed. Prices are given on page 248.

Plates.—Consuming industries, notably the railroad car builders, are poorly supplied with business and this condition is reflected in the demand for plates. There is good observance of 1.90c., base Pittsburgh, in this district, because makers believe that if there were business, it would be placed as readily at that price as at a lower one. Prices are given on page 248.

Rail and Track Supplies.—The Carnegie Steel Co. will roll 27,000 tons of rails for the Norfolk & Western and the Bethlehem Steel Co. 20,000 tons. This road also has placed 15,000 kegs of spikes with a local maker. Generally the market is dull and except on light rails, prices are unchanged. Light rails are not moving, and quotations made against inquiries usually are merely a basis for negotiation. The ordinary quotation on billet rails is 1.70c., base mill, and on rail steel rails 1.60c. But these prices can be bettered by at least $2 a ton. Prices are given on page 248.

Hot Rolled Flats.—The market is holding well at 2.40c., base Pittsburgh, for stock 6 in. and narrower and 2.20c., base, on wider material. Heavy gage material alone is subject to some shading, but by only one or two producers. With most mills the width rather than the gage governs the base price. Business is fairly good. Cotton tie business is good, but American makers are having some pretty strong foreign competition and their prices are determined by what they have to meet to get orders. The basis of sale is the same as a year ago, f.o.b. South Atlantic ports with freight added from the port instead of the mill. There is no information as to either mill or port prices, except that it is below last year's basis of $1.40 per 45-lb. bundle. Prices are given on page 248.

Cold Rolled Strips.—Makers in this district now are generally quoting 3.75c., base Pittsburgh, and while business at that level is light, due to the fact that so many large users covered at lower prices, there is now a disposition to pass business carrying lower figures. Prices are given on page 248.

Bolts, Nuts and Rivets.—Prices show no change, and the demand continues of the character of recent weeks. Buyers are buying frequently in small lots and not anticipating their requirements. Prices and discounts are given on page 249.

Coke and Coal.—Spot tonnages of furnace coke have grown pretty scarce in the past week due to the curtailment of production, and while demand is far from active, producers have been able to get an advance of 15c. a ton on coke for spot shipment over last week's price. Some producers are asking $3 per net ton at ovens, but on actual business $2.90 appears to be both top and bottom of the market. The foundry coke market has shared in this advance. Too much furnace coke is going to foundries at prices ranging from $3.25 to $3.50 for the foundries to be interested in standard 72-hr. coke, producers of which want at least $3.75, while some are asking as high as $4.25. Sales at the latter figure are very difficult and in general $4 represents the maximum price on good brands of standard foundry coke. The coal market still is rather dull and with supplies quite ample for requirements. Prices are no more than steady. A movement is on foot, which is finding some public support, seeking to bring operators of union mines and the union miners together in an effort to readjust the wage scale so that union mines now largely idle in this district and in southern Ohio may be reopened. If the movement is successful, it would mean that some nonunion mines would have to shut down, since without union coal there is an ample supply for all requirements. If the nonunion mines continued in operation after some of the union mines got going, it would mean price competition that might offset fully any advantage the union mine operators would secure through lower wages. Coke and coal prices are given on page 249.

Steel and Iron Bars.—Total business in steel bars has run somewhat heavier in the past week than in the week before, but buying and specifying still are strictly in accordance with buyers' requirements. Large consuming industries are producing at about 50 per cent of capacity. Prices are steady at 2c., base Pittsburgh, whether the order is large or small, or comes from a large or small consumer. Reinforcing bars are selling as low as 2c. flat, but generally the effort is toward maintaining 2c., base. Lack of railroad orders tells on business in iron bars. Prices are given on page 248.

Old Material.—A local steel company with exacting specifications has just closed for a round tonnage of heavy melting steel, paying $19 per gross ton delivered. It is believed that the full purchase amounts to close to 20,000 tons. Dealers participating in the business are offering $18.50 for tonnage and have paid as much as $18.75 in their efforts to cover. Another consumer in the district is nibbling for tonnage and it now looks as though the Pittsburgh market was swinging in line with other consuming centers. West of Pittsburgh $18.50 has been paid and in the East as much as $17 is reported on heavy melting steel. For local consumers to get supplies it was necessary that they raise their bids to the equivalent of prices prevailing elsewhere.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel	$18.50 to $19.00
No. 1 cast, cupola size	17.00 to 17.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	18.50 to 19.50
Compressed sheet steel	16.50 to 17.00
Bundled sheets, sides and ends	15.50 to 16.00
Railroad knuckles and couplers	19.50 to 20.00
Railroad coil and leaf springs	19.50 to 20.00
Low phosphorus blooms and billet ends	22.00 to 22.50
Low phosphorus plate and other material	21.00 to 21.50
Railroad malleable	17.00 to 17.50
Steel car axles	19.50 to 20.00
Cast iron wheels	17.00 to 17.50
Rolled steel wheels	19.50 to 20.00
Machine shop turnings	13.50 to 14.00
Short shoveling turnings	13.50 to 14.00
Sheet bar crops	17.50 to 18.00
Heavy steel axle turnings	15.50 to 16.00
Short mixed borings and turnings	12.50 to 13.00
Heavy breakable cast	15.50 to 16.00
Stove plate	13.50 to 14.00
Cast iron borings	13.50 to 14.00
No. 1 railroad wrought	14.50 to 16.00
No. 2 railroad wrought	17.50 to 18.00

Advances in Scrap in Detroit District

DETROIT, July 21.—A stronger tone has been noted in the scrap market in the past week, with an increase of 25c. per ton being registered in borings and short turnings, long turnings, hydraulic compressed and flashings. Current shipments are equal to the production of old material in the district and dealers are making some speculative purchases, which have been a strengthening factor.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$13.25 to $13.75
Borings and short turnings	10.50 to 11.00
Long turnings	10.25 to 10.75
No. 1 machinery cast	15.00 to 16.00
Automobile cast	21.00 to 22.00
Hydraulic compressed	12.25 to 12.75
Stove plate	12.50 to 13.00
No. 1 busheling	12.25 to 12.75
Sheet clippings	8.75 to 9.25
Flashings	11.00 to 11.50

Chicago

Buying Still Short of Shipments and Prices None Too Strong

CHICAGO, July 21.—The low level of consumers' stocks is reflected in an increasing number of orders calling for early delivery. Not only the mills but jobbers are feeling this demand. Aggregate mill bookings, however, still fall short of shipments, notwithstanding further curtailment of output.

Unquestionably the most depressing market factor at the present time is the lack of railroad buying. The Norfolk & Western has bought 47,000 tons of rails, dividing them between the Carnegie and Bethlehem companies, and it is hoped that this purchase is the forerunner of a general buying movement in that commodity. Railroad car buying is almost negligible and there are no definite indications as to when the carriers will reenter the equipment market. In some quarters there are expressions of vague hopes for large car orders next fall. Other observers point to the increased efficiency of the transportation system and deny the need for additional rolling stock. Attention is also called to the application of Western roads for a general freight rate advance of 11 per cent as a reason for expecting a continuation of conservatism in purchases.

There is also a notable absence of large contracts for oil storage tanks. On the other hand, building construction is proceeding at a satisfactory rate and a good rate of activity continues in the automobile and farm implement industries. Makers of cold rolled shafting and screw stock are busy, a leading Western manufacturer reporting a gain of 150 per cent over its business of a year ago.

The sharply curtailed demand from the railroad car buildings and the tank fabricators is nevertheless having a telling effect, particularly on the heavier rolled products. Plates, shapes and soft steel bars, although they have not undergone a general decline, are unquestionably weaker. Bar iron has receded $1 to $2 a ton. Sheets and cold rolled strip, which recently showed indications of returning stability, have again weakened. On the other hand, cold finished steel bars and shafting are unique among rolled products from the standpoint of price strength. Scrap prices are also stronger, many grades of old material having advanced in the face of light consumer buying.

The blowing out of a Gary furnace and the resumption of an Inland stack leaves the steel works blast furnace situation as it was, 23 stacks being active out of a total of 35 in this district. A Wisconsin steel works stack is expected to go out for relining about Aug. 1. Ingot production remains substantially unchanged with the foremost interest on a 75 per cent basis and the leading independent on a 65 per cent level.

Pig Iron.—The market is quiet and without unusual features. Current bookings consist largely of rather small tonnages for early or third quarter shipment, although occasional tonnages are placed for the entire last half. A Wisconsin melter is inquiring for 1000 tons of malleable for September to December delivery. A Quincy, Ill., user wants 850 tons of foundry and 50 tons of 4 to 5 per cent silvery. Prices on local iron are unchanged. The rate of merchant output is also the same as heretofore, two Iroquois, two Federal, one Mayville and the Zenith furnace at Duluth being in operation. The Thomas furnace at Milwaukee, however, is scheduled to go in during the current week. The Inland Steel Co. stack, which has been idle for repairs since July 4, resumed production July 20. A Wisconsin Steel Co. furnace is expected to be blown out for a relining Aug. 1. A Michigan melter has bought 150 tons of 8 to 9 per cent silvery. Silvery in tonnages still can be bought at $25, f.o.b., Jackson County, for 8 per cent, although carlots generally bring $1 higher. Fourteen to 16 per cent ferrosilicon has been sold at $44, delivered. A local inquiry for 300 tons calls for Ohio delivery. Foundry melt is holding up well, except among railroad car and equipment makers, some of whom have held up deliveries of iron.

Quotations on Northern foundry, high phosphorus, malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$20.50
Northern No. 1 foundry, sil. 2.25 to 2.75	21.00
Malleable, not over 2.25 sil.	20.50
High phosphorus	20.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	23.51
Southern No. 2 (barge and rail)	22.68
Low phos., sil. 1 to 2 per cent, copper free	31.30
Silvery, sil. 8 per cent	$29.79 to 30.79
Electric ferrosilicon, 14 to 16 per cent	44.00 to 44.79

Ferroalloys.—Several sales of ferromanganese aggregating 1500 tons have been made at $115, seaboard. A local inquiry for 500 to 1000 tons is still current. Spiegeleisen is also more active, recent orders totaling 1500 tons. This commodity is relatively low as compared with ferromanganese, large lots going at $30, Eastern furnace, or $38.58, delivered.

We quote 80 per cent ferromanganese, $122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, $85, delivered; spiegeleisen, 18 to 22 per cent, $38.58 to $40.04, delivered.

Bars.—While bookings in mild steel bars show a gain over those for the same period in June, it is nevertheless true that commitments are still falling short of shipments. As a consequence, competition is growing keener and prices are not so firm as heretofore at 2.10c., Chicago. In fact, occasional concessions to 2c. are reported. Demand for bar iron is still disappointingly light and prices have weakened, 1.95c., Chicago, being rather common with as low as 1.90c. reported. Rail steel bars range from 2c. to 2.10c., Chicago, with the major portion of the current tonnage going at the lower figure.

Mill prices are: Mild steel bars, 2.10c.; common bar iron, 1.95c. to 2c., Chicago; rail steel, 2c., Chicago to 2c., Chicago district mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.60c. for rounds and hexagons and 4.10c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c.

Plates.—Demand is light and prices are not any too strong. Occasional concessions to as low as 2c., Chicago, are still reported. There is a dearth of railroad car buying and no large oil storage tank projects are before the trade. A local mill has booked 1000 tons of plates for miscellaneous small tanks, and about 2000 tons for similar work is pending.

The mill quotation is 2.10c., Chicago. Jobbers quote 3.10c. for plate out of stock.

Structural Material.—Notwithstanding the large tonnage of fabricating work pending, contracts are slow in reaching the point of closing. There is an unusually large amount of construction work under way and it is possible that hesitance to add to these activities is due to fear of labor trouble. The American Bridge Co. has been awarded two local viaducts aggregating 2200 tons. Among new projects the Adams Street Bridge, Chicago, will require 2300 tons and a municipal pumping station 600 tons. As a whole, fabricating shops are still fairly busy. Plain material prices are still generally quoted at 2.10c., Chicago, although concessions to 2c., Chicago, are reported.

The mill quotation on plain material is 2.10c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Rails and Track Supplies.—The Norfolk & Western has placed 27,000 tons of rails with the Carnegie Steel Co. and 20,000 tons with the Bethlehem Steel Co. The International Railway of Central America has ordered 2300 tons from the Gary mill. The Chicago, Aurora & Elgin is inquiring for 1200 tons of rails. The National Railway of Mexico is inquiring for 1,250,000 tie plates. Several orders for light rails have been taken at 1.90c.,

mill. The Great Northern, which is in the market for rails, will probably buy 25,000 to 30,000 tons, instead of 10,000 as previously indicated in this column.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 1.80c. to 1.90c., f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.35c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c. base, and track bolts, 4.55c. base.

Bolts, Nuts and Rivets.—After holding without a break for a long period, bolt and nut discounts are commencing to show signs of instability. On large machine bolts 60 and 10 off, Chicago, appears to represent the extreme concession. A large inquiry from the Great Northern for bolts and nuts is still pending. Small rivets are still very weak, with 70 and 10 and 5 off now representing practically the top of the market.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to ⅞ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to ⅞ x 4 in., 50 off; larger sizes, 50 off; hot-pressed nuts, squares, tapped or blank, $3.50 off; hot-pressed nuts, hexagons, tapped or blank, $4 off; coach or lag screws, 60 per cent off.

Sheets.—There has been some improvement in the volume of sheet business, but at the expense of prices. Galvanized and blue annealed again have lost ground, the former having declined to 4.30c., Chicago district mill, and the latter to 2.40c. The local independent is running 17 out of 28 hot mills. Its shipments of copper alloy sheets in June were the largest for any month in its history. July deliveries promise to be larger than those for June.

Chicago delivered prices from mill are 3.35c. for No. 28 black, 2.45c. to 2.50c. for No. 10 blue annealed and 4.35c. to 4.40c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.50c. base for blue annealed, 4c. base for black, and 5c. base for galvanized.

Wire Products.—Buying is still largely for early needs, but with crop prospects steadily improving, a good volume of contracting is expected to develop by the middle of August. Wire nails continue to range from $2.70 to $2.75, Chicago district mill; plain wire from $2.55 to $2.60; cement coated nails from $1.90 to $1.95, and galvanized barbed wire from $3.40 to $3.45.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, $3.05 per 100 lb.; common wire nails, $3.15 per keg; cement-coated nails, $2.25.

Cast Iron Pipe.—Pipe shops are booked until Sept. 1 on all except the large sizes and are taking a firmer attitude on prices, asking a minimum of $42, base Birmingham, for 6 in. and larger. Flint, Mich., has awarded 240 tons to James B. Clow & Sons. The United States Cast Iron Pipe & Foundry Co. has booked 175 tons for Hammond, Ind., and 300 tons for Niles Center, Ill. The National Cast Iron Pipe Co. has taken 350 tons for Sturtevant, Wis., and 130 tons for Royalton, Ill. Fairfield, Ill., has indefinitely postponed action on 800 tons of 10 in. Pending work includes:

Villa Park, Ill., 1332 tons of 6 in., 950 tons of 8 in., 638 tons of 10 in. and 82 tons of 12 in., Class B, bids taken July 20.

Glenview, Ill., 100 tons of 6 in. and 35 tons of 8 in., Class B, bids through contractor July 21.

Hartford, Ill., 122 tons of 8 in., 190 tons of 6 in., 22 tons of 4 in., Class C, contractors' bids July 21.

Martins Ferry, Ohio, 128 tons of 12 in., 350 tons of 8 in. and 20 tons of 6 in., Class C, contractors' bids July 21.

Wayne, Mich., 500 tons, July 21.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $52.20 to $54.20; 6-in. and over, $48.20 to $50.20; Class A and gas pipe, $4 extra.

Cold Finished Steel Bars.—Demand for screw stock and shafting is heavy and prices are firm at 2.60c., Chicago. Business is widely distributed, coming not only from the automobile industry but from the implement makers, the oil fields and various other sources. A leading local mill reports a gain of 150 per cent over its bookings of a year ago.

Hot-Rolled Strip.—This commodity has weakened and now ranges from 2.30c., Chicago, for wider than 6 in. to 2.40c. for 6 in. and narrower. Even lower prices have been reported, but lack verification, while some small lots continue to move at higher levels.

Reinforcing Bars.—Buying of concrete bars continues at a steady pace, and while a large proportion of current work consists of small tonnages, the aggregate bookings of billet steel reinforcing bars thus far this month have been equal to those of the same period a year ago. In addition, a much larger tonnage of rail steel has been placed than was the case twelve months ago. The price situation shows substantially no change, the quotation on billet steel reinforcing bars being relatively steady at 2.60c., Chicago warehouse. Lettings include:

Horlick's Malted Milk Co., warehouse, Racine, Wis., 300 tons, to Kalman Steel Co.

Approaches to Mendota Bridge, St. Paul, Minn., 400 tons, to Kalman Steel Co.

Fidelity Building, Benton Harbor, Mich., 110 tons, to Concrete Steel Co.

Store and office building, Niles, Mich., 100 tons, to Truscon Steel Co.

White Rock Mineral Springs Co., Waukesha, Wis., warehouse, 100 tons, to Concrete Steel Co.

Olivet Institute, Chicago, 100 tons, to Barton Spiderweb Systems Co.

Marks garage building, Chicago, 120 tons, to Olney J. Dean & Co.

Illinois State highway work, 100 tons, to Olney J. Dean & Co.

Parke-Davis Drug Co., Detroit, warehouse and office building at Chicago, 300 tons of rail steel, to Calumet Steel Co.

William Schukraft & Sons Co., wagon factory, Chicago, 130 tons of rail steel, to Calumet Steel Co.

Store building, Seventy-ninth Street and Kenwood Avenue, Chicago, 200 tons of rail steel, to Calumet Steel Co.

Pending work includes:

Plibrico Co., plant, Chicago, 150 tons.

Chapel, University of Chicago, Chicago, 100 tons.

State highway bridge, Baraboo, Wis., 486 tons, bids closed July 22.

Vocational school, Oshkosh, Wis., 250 tons, bids in July 17.

State Highway Bridge at Baraboo, Wis., 486 tons, bids close July 22.

Old Material.—Prices have advanced rather generally notwithstanding a dearth of consumer demand. The explanation seems to lie in the fact that yard dealers are holding material in anticipation of higher prices later on with the result that brokers with short orders are finding it difficult to fill them. As an added factor, heavy rejections by certain mills have caused dealers to advance their prices in proportion to the stricter adherence to specifications. Railroad offerings include the Santa Fe, 4000 tons; the Belt Railway of Chicago, 300 tons, and the Baltimore & Ohio, Chicago terminal, 165 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Iron rails	$17.00 to $17.50
Cast iron car wheels	17.00 to 17.50
Relaying rails, 56 and 60 lb.	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Forged steel car wheels	18.50 to 19.00
Railroad tires, charging box size	19.00 to 19.50
Railroad leaf springs, cut apart	19.00 to 19.50
Rails for rolling	17.50 to 18.00
Steel rails, less than 3 ft	18.25 to 18.75
Heavy melting steel	16.00 to 16.25
Frogs, switches and guards, cut apart	17.00 to 17.25
Shoveling steel	15.75 to 16.00
Drop forge flashings	11.00 to 11.50
Hydraulic compressed sheets	13.00 to 13.50
Axle turnings	13.50 to 14.00
Steel angle bars	17.50 to 18.00
Steel knuckles and couplers	18.25 to 18.75
Coil springs	19.50 to 20.00
Low phos. punchings	17.50 to 18.00
Machine shop turnings	9.50 to 10.00
Cast borings	11.25 to 11.75
Short shoveling turnings	11.25 to 11.75
Railroad malleable	18.00 to 18.50
Agricultural malleable	17.50 to 18.00

Per Net Ton

Iron angle and splice bars	16.75 to 17.25
Iron arch bars and transoms	20.25 to 20.75
Iron car axles	26.25 to 26.75
Steel car axles	16.75 to 17.25
No. 1 busheling	11.50 to 12.00
No. 2 busheling	8.50 to 9.00
Pipes and flues	10.50 to 11.50
No. 1 railroad wrought	14.25 to 14.75
No. 2 railroad wrought	14.25 to 14.50
No. 1 machinery cast	17.50 to 18.00
No. 1 railroad cast	16.50 to 17.00
No. 1 agricultural cast	16.00 to 16.50
Locomotive tires, smooth	16.00 to 16.50
Stove plate	14.50 to 15.00
Grate bars	14.25 to 14.75
Brake shoes	14.50 to 15.00

New York

German Pipe Foundry Low Bidder in New York Municipal Letting

NEW YORK, July 21.—Somewhat more business has been put through in pig iron in the past week than in the week preceding and the amount of inquiry now before local offices is greater. The 7500 to 8000 tons bought in the week was mostly for third quarter delivery. While the statement is repeated that Buffalo makers are more generally adhering to a $19 basis, sales are still traced to that district in which the freight reduction would leave furnace more nearly $18.50 than $19. A western New York company has closed for 500 tons of malleable and there is some malleable pending for Connecticut. A lot of 400 tons of foundry iron for New Jersey delivery was taken by an eastern Pennsylvania seller. Among pending inquiries is one for 1000 tons for fourth quarter delivery from a Vermont foundry. Stocks of foreign iron at two New England points that are offered by New York and Boston sellers amount to 10,000 to 12,000 tons. Indian iron is a large factor in these stocks, but they represent also considerable amounts from a German producer, with smaller tonnages from Holland and elsewhere. Foundry iron prices have shown little variation in the past month. While some furnaces are disposed to ask an advance for fourth quarter delivery, this is not the attitude of all, as is indicated by the few transactions on which deliveries run to the end of the year.

We quote delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$22.52 to $22.77
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	23.02 to 23.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	22.52 to 23.02
Buffalo, sil. 1.75 to 2.25	23.91
No. 2 Virginia, sil. 1.75 to 2.25	28.44

Ferroalloys.—The volume of inquiry for ferromanganese is increasing as consumers evidently develop greater interest in providing for fourth quarter requirements. In addition to the usual small lots of 100 tons or less, there are several sizable inquiries current, one for about 500 tons and another for 1000 tons. Although fourth quarter delivery is generally specified, sellers are able in some instances to sell for part shipment in the third quarter. The price of $115 per ton seaboard or domestic furnace continues firm. Spiegeleisen is quiet and the price unchanged. Increase is noted in the volume of inquiry for ferrosilicon, but tonnages are still confined to small lots as a rule.

Cast Iron Pipe.—The market on bell and spigot pipe continues firm except when domestic producers are encountering the competition of foreign makers on highly desirable business. The second opening of bids on 2200 tons of cast iron pipe for the Panama Canal, July 21, by the Navy Department, Washington, resulted in a low bid the second time by the Pont-a-Mousson works, France, through their agents B. Nicoll & Co., New York. The second lowest bid, that of the United States Cast Iron Pipe & Foundry Co. was $49 per ton, about $2 per ton higher than the French offer. The opening of bids on 9000 tons of pipe and fittings by the City of New York, July 19, brought out low bids on about 75 per cent of the tonnage from the Gelsenkirchener Bergwerks A. G., Germany. Details are given elsewhere in this issue. The soil pipe market is exhibiting slightly more firmness than for some time, a few makers having advanced prices about 2½ points and the recently prevailing high discounts having almost disappeared.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $50.60 to $51.60; 4-in. and 5-in., $55.60 to $56.60; 3-in., $65.60 to $66.60, with $5 additional for Class A and gas pipe. Discounts of both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 55½ to 57½ per cent off list; heavy, 65½ to 67½ per cent off list.

Finished Iron and Steel.—A feeling of optimism, with some tangible ground for it, is taking possession of the steel trade. In the first place, July business is at a fairly good rate, the volume in some cases running well in comparison with that of June. In several important branches of steel making the outlook is good. This is true of structural steel, of which there is an abundance of work in the market; requirements of the oil industry appear promising in view of plans which have been announced by some of the oil companies for drilling operations and pipe lines, and it is stated that the Eastern railroads will soon come into the market for their annual rail requirements, which are likely to be in line with last year's purchases. The run of small orders from jobbers and consumers is encouraging for mid-summer. Another feature of decided encouragement to steel company representatives is that price declines, to a large extent, have apparently been checked. Buyers of sheets are finding greater insistence on the part of most of the mills in getting 4.20c. for galvanized, 3.15c. on black and 2.30c. on blue annealed. These prices are not thoroughly established, for there have been sales of black sheets at 3.10c. and blue annealed at 2.25c., but there are indications that sheet manufacturers have made real progress in putting their prices on a higher level. In plates a singular situation obtains. The common run of orders does not bring out prices lower than 1.85c. or 1.90c., Pittsburgh, but on car plates extremely low quotations have been made, as low as 1.70c., Pittsburgh, on one or two orders. Structural shapes continue at 1.90c. to 2c., Pittsburgh, with more emphasis being placed on 2c. quotations by some mills. Bars remain at 2c., Pittsburgh, in this territory notwithstanding concessions of $2 a ton made to Detroit automobile manufacturers. The American Bridge Co. has taken 6300 tons additional steel for New York subways.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c.; plates, 2.14c. to 2.24c.; structural shapes, 2.24c. to 2.34c.

Warehouse Business.—New orders are light but the total volume of business is good, one firm reporting its July business twice that of July, 1924. Except in sheets prices seem to be firming. Galvanized sheets have gone as low as 4.75c., though 5.35c. is still done and 3.90c. is a frequent quotation on black sheets. Reinforcing bars are moving well at 3.15c. In old metals there is decided strength, most of the list being 25c. higher per 100 lb. There was also an increase in lead and solder of ½c. Other advances include tin, brass sheets, rods and tubes, and copper sheets. Prices are given on page 268. We quote boiler tubes per 100 ft. as follows:

Lapwelded steel tubes, 2-in., $17.33; seamless steel, 2-in., $20.24; charcoal iron, 2-in., $25; 4-in., $67.

Old Material.—Under the impetus of broker buying to fulfill contracts, the market is registering a general upward movement, but as yet the strength is rather exclusively on the brokers' side of the market. No. 1 heavy melting steel continues quiet from the standpoint of mill buying, but brokers are paying from $15.50 to $16.50 per ton, delivered, depending upon the shipment. Probably only a minimum of tonnage is moving at the $15.50 price. Borings and turnings continue unchanged at $12 to $13 per ton delivered. Machine shop turnings are strong but no advance in price has occurred.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$11.00 to $11.50
Heavy melting steel (railroad or equivalent)	12.50 to 13.00
Rails for rolling	13.00 to 13.50
Relaying rails, nominal	23.00 to 24.00
Steel car axles	19.00 to 20.00
Iron car axles	23.00 to 24.00
No. 1 railroad wrought	13.50 to 14.00
Forge fire	10.25 to 10.75
No. 1 yard wrought, long	12.50 to 13.00
Cast borings (steel mill)	9.25 to 9.75
Cast borings (chemical)	12.00 to 12.50
Machine shop turnings	9.25 to 9.75
Mixed borings and turnings	9.00 to 9.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	12.00 to 12.50
Stove plate	10.00 to 11.50
Locomotive grate bars	10.50 to 11.00
Malleable cast (railroad)	14.00 to 14.50
Cast iron car wheels	13.00 to 13.50
No. 1 heavy breakable cast	13.00 to 13.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$16.50 to $17.00
No. 1 heavy cast (columns, building material, etc.), cupola size	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.)	14.00 to 14.50

San Francisco

More Foreign Steel Arrives—Little New Business—Prices Unchanged

SAN FRANCISCO, July 18 (*By Air Mail*).—Since July 1 about 2555 tons of Belgian steel has been delivered to local firms. This includes 1800 tons of angles, bars and rails, 255 tons of wire nails and about 500 tons of structural shapes. During the past week 500 tons of German foundry iron and 3500 tons of English coke were received by a local importer. It is considered unlikely that there will be any further large tonnages of Belgian steel delivered here for some time because of the strikes in the Charleroi and Center districts in Belgium. According to reports recevied by local importers most of the large steel plants in the principal Belgian producing centers have suspended operations.

The absence of new inquiries was a conspicuous aspect of business during the past week. The efforts of sellers to maintain prices at present levels are apparently meeting with success, although rumors of price shading continue. There are few inquiries pending which are really large enough to test out prices, and the present attitude of buyers may be appropriately described as conservative. During the week the Hutchinson Lumber Co. placed 280 tons of 70-lb. relay rails with an unnamed company, and the Southern Pacific Co. placed an order for 200,000 carriage and machine bolts approximately 100 tons. The Southern Pacific Equipment Co. is inquiring for about 70 tons of machine and carriage bolts; bids close July 22.

Pig Iron.—During the week the Southern Pacific Co. recalled its inquiry for 500 tons of foundry iron and put out a new inquiry for 1000 to 1500 tons, silicon 2.75 to 3.25 per cent, on which bids have closed. A local importer received 500 tons of German foundry iron, all of which has been sold at a price understood to have been about $26.50, duty paid, f.o.b. cars. The Los Angeles inquiry for about 500 tons of malleable iron, reported two weeks ago, has been placed with a San Francisco firm. Movement of Utah iron continues in moderate volume. Prices are unchanged.

*Utah basic	$27.00 to $28.00
*Utah foundry, sil. 1.75 to 2.25	27.00 to 28.00
**English foundry	27.00 to 28.00
**Belgian foundry	26.00
**Dutch foundry	25.00
**Indian foundry	26.50
**German foundry	26.50
*Birmingham, Ala., foundry, sil. 2.75 to 3.25	29.00 to 30.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Lettings during the week totaled about 1450 tons, and bids have closed for two other jobs which will require 990 tons. No new inquiries of large tonnage have come up for figures. Prices are holding somewhat more firmly at 2.40c. to 2.45c., c.i.f. Coast ports. Foreign shapes are still being quoted 2c. to 2.20c., c.i.f., duty paid, and light Belgian material is 1.80c. Pacific Rolling Mill Co., Inc., took 850 tons for the Mission High School, and Moore Dry Dock Co. is low bidder for the Mercantile Trust Co. building in Berkeley calling for 880 tons.

Plates.—No fresh inquiries have been developed. The Bethlehem Shipbuilding Co. took 350 tons for a General Petroleum Co. barge, and the Steel Tank & Pipe Co. was awarded about 50 tons of copper lined steel pipe by the National Lead Co. Prices are unchanged, 2.35c. to 2.40c., c.i.f. Coast ports. While 2.35c. is still quoted for desirable tonnages, 2.40c. is more general, and little business has been closed recently under the 2.40c. figure. The Dixon irrigation project at Woodland, Cal., requiring 150 tons has been abandoned.

Bars.—A fairly large number of small jobs have been placed recently calling for several hundred tons of reinforcing bars, but there are few individual jobs pending that require more than 100 tons. Prices are steady. Soft steel bars are quoted by local mills at 2.45c., f.o.b., San Francisco, in 100 ton lots, and 2.50c. in smaller purchases. Reinforcing bars are 3.25c., base, for 250 tons or more out of stock; 3.35c., base, carload, out of stock, and 3.80c., base, l.c.l. out of stock. Foreign bars range from 1.80c. to 2c., c.i.f., duty paid. Lettings of concrete bars during the week for jobs calling for 100 tons or more were as follows:

Oakland, Cal., Y. W. C. A., 100 tons, to an unnamed San Francisco jobber.
Haywood High School, Haywood, Cal., 150 tons, to W. S. Wetenhall Co.
Bridge over Arroyo Seco River at Salinas, Cal., 105 tons, to an unnamed jobber.

Sheets.—Although no large amount of business is being done the efforts of sellers to maintain firmer prices have been successful in most instances. Current quotations are as follows: Blue annealed sheets, 2.30c. to 2.40c., black sheets, 3.15c. to 3.20c., and galvanized sheets, 4.20c. to 4.25c., all Pittsburgh base.

Warehouse Business.—The past week brought out few new developments, except in regard to the wire nail situation. Jobbers' prices are fairly firm at $3.50 base, but manufacturers' prices are somewhat uncertain, quotations ranging from $3.15 to $3.20, f.o.b. San Francisco, with rumors prevalent that $3.10 has been named. No verification of the $3.10 price has been obtained, but the fact remains that nail prices are very unstable. Jobbers' sales, so far this month, have been somewhat sluggish. Current quotations are as follows:

Merchant bars, $3.30 base per 100 lb.; merchant bars, ⅜ in. and under, rounds, squares and flats, $3.80 base, per 100 lb.; soft steel bands, $4.15 base, per 100 lb.; angles, ⅞ in. and larger x 1½ in. to 2¾ in., inc., $3.30 base, per 100 lb.; channels and tees, ¾ in. to 2¾ in., inc., $3.90 base, per 100 lb.; angles, beams and channels, 3 in. and larger, $3.30 base, per 100 lb.; tees, 3 in. and larger, $3.30 base, per 100 lb.; universal mill plates, ¼ in. and heavier, stock lengths, $3.30 base, per 100 lb.; spring steel, ¼ in. and thicker, $6.30 base, per 100 lb.; wire nails, $3.50 base, per 100 lb.; cement coated nails, $3 base, per 100 lb.; No. 10 blue annealed sheets, $3.70 per 100 lb.; No. 28 galvanized sheets, $5.75 per 100 lb.; No. 28 black sheets, $4.65 per 100 lb.

Coke.—A local importer received 3500 tons of English coke during the past week, most of which has been sold locally. General interest is slack and prices are soft but unchanged.

English beehive, $14.50 to $17 at incoming dock, and English by-product, $12.50 to $14; German by-product, $14 to $14.50; Birmingham, Ala., by-product, $19 to $20 delivered; Wise County, Va., beehive, $22 delivered.

Old Material.—Mid-summer dullness seems to have settled down upon the local scrap market. Very little is being done and prices continue weak.

Prices for scrap delivered to consumer's yards are as follows:

	Per Gross Ton
No. 1 heavy melting steel	$10.50 to $11.00
Scrap rails, miscellaneous	10.50 to 11.00
Rolled steel wheels	10.50 to 11.00
Couplers and knuckles	10.50 to 11.00
Mixed borings and turnings	6.00 to 6.50
Country mixed scrap	8.00 to 8.50
No. 1 cast scrap	22.00 to 24.00

Cincinnati

Stiffening Prices but Volume of Buying Small

CINCINNATI, July 21.—Purchases of pig iron have been relatively few in number and have approximated 3000 tons in the past week. Prices are gradually retrieving their recent drop, although Northern foundry can still be procured at $19, Ironton. Furnaces in Ironton territory, however, possess comfortably filled order books for the third quarter annd are asking $19.50, furnace. They are indisposed to solicit fourth quarter business at prevailing quotations. Many large buyers have already contracted for their last half requirements, but a considerable number of small consumers are standing by to see what turn the market will take in the immediate future before covering for their needs. Kramer Brothers, Dayton, Ohio, have closed for 400 tons of Northern foundry, while a Springfield, Ohio, melter has taken 300 tons. Inquiries signify slightly increased buying in the next few

days. A Dayton, Ohio, melter expects to buy 1500 to 2000 tons of malleable. The Ross-Mehan Foundry, Chattanooga, Tenn., is in the market for 1200 tons of foundry iron. Small lots of Tennessee iron have been sold at $17.50, Birmingham. Alabama iron has been inactive in this market and is quoted at $18 to $18.50, Birmingham.—Later: A consumer in Cincinnati territory is reported to have closed for 50,000 to 75,000 tons of basic pig iron for third and fourth quarter delivery. The business is said to have been distributed among two or three furnaces.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincnnnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$22.05 to $24.55
Alaoama fdy., sil. 2.25 to 2.75	22.55 to 25.05
Tennessee fdy., sil. 1.75 to 2.25	21.55
Southern Ohio silvery, 8 per cent	28.27
Southern Ohio fdy., sil. 1.75 to 2.25	21.27 to 21.77
Southern Ohio, basic (nominal)	22.27
Southern Ohio, malleable	21.27 to 21.77

Bars, Plates and Shapes.—Sales of bars are moderate in volume. Several mills state that their bookings in this territory have revealed a steady increase as compared with last month's orders. Buyers steadfastly refuse to order for their future needs and are content to cover only their immediate requirements. The prevailing price remains at 2c., Pittsburgh. The Big Four Railroad is reported to have placed its third quarter plate business, totaling 800 tons, with a Cleveland producer at 1.90c., Cleveland. Inquiry for shapes is lifeless, but the price remains at 2c., Pittsburgh. Local sellers are confident that the tone of the market is improved and that consumers need not expect further price weaknesses to develop. Structural activities have multiplied. It is reported that the Moss Steel Co., Wheeling, W. Va., will supply 1500 tons for the Masonic Temple, Dayton, Ohio. Action is expected shortly on the building for the Cincinnati *Enquirer*, calling for 3150 tons. Another important pending project is the new boiler plant for the Chesapeake & Ohio Railroad at Huntington, W. Va., 1000 tons. Bids have gone in to the Louisville & Nashville Railroad for 1800 tons for several bridges in the South. Local fabricators report that future prospects are encouraging. However, price seems to have been the paramount consideration in most recent lettings and present jobs are bringing out low figures.

Wire Goods.—The Big Four Railroad has divided its third quarter nail and wire requirements between two Pittsburgh mills. Competition of Ironton district mills on purely a price basis appears to be less keen than it has been for a number of weeks. Sales by independent mills at 2.60c., Ironton, on common wire nails are still being made, but buyers are forced to pay haulage charges from river terminals to the ultimate destination. Eastern interests declare that the price of 2.65c., Pittsburgh or Cleveland, is firmly established. Bookings during the past week affirm their statement. Plain wire is quoted at 2.50c., Pittsburgh or Cleveland. Some cutting below this figure is still indulged in, but it does not assume large proportions. Demand from the jobbing trade has picked up. Jobbers' stocks, in most cases, are meager and indications point to increased buying in the next few weeks.

Reinforcing Bars.—It is reported that the Kalman Steel Co., Chicago, has been awarded 250 tons for the Masonic Temple, Dayton, Ohio. A lull in activities exists locally. No awards of consequence have been made, although decision on several sizable jobs is now pending. Rail steel bars are quoted at 1.95c., mill. No change from the price of 2c. to 2.10c., mill, has been made on new billet bars.

Sheets.—Gradual adjustment of output to demand has resulted in stabilizing prices. Sellers are confident that the market has dragged bottom and they are firmly resisting pressure for further reductions. It is worthy of note that the price of 3.15c., Pittsburgh, on black sheets has not varied for several weeks. Galvanized sheets are quoted at 4.20c., Pittsburgh, and, although buyers have taken advantage of some offers at lower figures, this price is well entrenched. Blue annealed sheets are slightly stronger at 2.30c., Pittsburgh, due to increased sales. Auto sheets have a lean market in this territory, but several producers are selling a considerable quantity to Detroit manufacturers. Mills are not inclined to solicit business more than 30 to 40 days ahead. They feel that increased activities in the early fall will necessarily bring about a readjustment of prices that will be more favorable to producers. The Newport Rolling Mill Co., which has been down for two weeks for repairs and inventory taking, resumed sheet mill operations on July 20. Other mills in this territory are running about 80 per cent of capacity.

Tin Plate.—Can manufacturers in this territory have filed their specifications for August shipments. Quotations are $5.50 per base box, Pittsburgh, but this figure is being shaded in some instances by mills.

Warehouse Business.—Consistently good sales are reported by leading jobbers. The volume of business is slightly greater than that in June. Blue annealed sheets have acquired strength and are commanding a better market. Several important sellers are well fortified with orders for reinforcing bars. Movement of structural steel has increased, but pipe and tubular goods sales have diminished. Interest in nails is dull. Jobbers of cold-rolled steel state that sales for 1925 are ahead of those last year. Consumers are relying upon quick delivery and, therefore, refuse to anticipate any but immediate requirements. Prices show stability.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.25c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds and hexagons, 3.85c.; squares, 4.35c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.10c.; No. 28 galvanized sheets, 5.25c.; No. 9 annealed wire, $3.00 per 100 lb.; common wire nails, $2.95 per keg base; cement coated nails, $2.40 per keg; chain, $7.55 per 100 lb. base; large round head rivets, $3.75 base; small rivets, 65 per cent off list. Boiler tubes, prices net per 100 ft., lap welded steel tubes, 2-in., $18; 4-in., $38; seamless, 2-in., $19; 4-in., $39.

Coke.—A fairly steady movement of foundry grades characterizes the coke market. The Portsmouth By-Product Coke Co., Portsmouth, Ohio, has increased its production of foundry coke. Despite the fact that $6.50, Connellsville, is the list price of by-product foundry coke, several companies in this territory have set a maximum price at ovens, which is a shading of the former quotation. Furnace coke is comparatively inactive. Several local dealers have disposed of approximately 1750 tons, divided between foundry and furnace grades, in the past week. A consumer in this territory has closed for 360 tons of foundry coke. Domestic grades continue to be weak, but prices are beginning to firm up because of the anticipated anthracite coal strike.

Old Material.—The scrap market is gradually acquiring strength. Although mill and furnace buying is at a minimum, dealers are reported to be paying good prices for railroad offerings in anticipation of increased consumer interest in the early fall. The Louisville & Nashville Railroad has a list of about 8000 tons, including 3500 tons of rails and 1230 tons of car wheels, which closes this week. Heavy melting steel is firm at $14 to $14.50. Prices remain unchanged.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	$14.00 to $14.50
Scrap rails for melting	14.00 to 14.50
Short rails	18.00 to 18.50
Relaying rails	28.00 to 28.50
Rails for rolling	15.00 to 15.50
Old car wheels	14.00 to 14.50
No. 1 locomotive tires	17.00 to 17.50
Railroad malleable	16.00 to 16.50
Agricultural malleable	15.50 to 16.00
Loose sheet clippings	10.00 to 10.50
Champion bundled sheets	12.00 to 12.50
Per Net Ton	
Cast iron borings	8.50 to 9.00
Machine shop turnings	7.50 to 8.00
No. 1 machine cast	18.00 to 18.50
No. 1 railroad cast	16.00 to 16.50
Iron axles	22.50 to 23.00
No. 1 railroad wrought	11.50 to 12.00
Pipes and flues	9.00 to 10.00
No. 1 busheling	10.50 to 11.00
Mixed busheling	9.50 to 10.00
Burnt cast	10.00 to 10.50
Stove plate	10.50 to 11.00
Brake shoes	10.50 to 11.00

St. Louis

Interest in Iron for Last Half—Agricultural Steel Buying

ST. LOUIS, July 21.—Of approximately 10,000 tons of pig iron sold during the week, 5000 tons of basic will be supplied by the St. Louis Coke & Iron Co. to an East Side melter. The Granite City maker also sold 1000 tons of foundry iron to a St. Louis machinery builder and 200 tons to a western Missouri melter for last half shipment. A local melter bought 1000 tons of foundry iron from a Chicago maker, who also sold 125 tons to an engine builder, both for prompt shipment. Inquiries include 1500 tons of malleable for a Tennessee melter, 800 to 100 tons of malleable iron for a central Illinois concern, and 500 tons from a Quincy melter. Thus it will be seen that increased interest is being shown in last half requirements by melters in the district. The market seems firmer, and one leading Southern producer advanced its price 50 cents a ton.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City.

Northern fdy., sil. 1.75 to 2.25	$22.66
Northern malleable, sil. 1.75 to 2.25	22.66
Basic	22.66
Alabama fdy., sil. 1.75 to 2.25 (rail)	$23.67 to 24.17
Tennessee fdy., sil. 1.75 to 2.25	22.67
Granite City iron, sil. 1.75 to 2.25	21.31 to 21.81

Finished Iron and Steel.—Building permits issued for the first half of 1925 total $31,329,269, which, except for 1923 and 1924, are greater than the total permits for any year in the city history. While St. Louis may be in the midst of a building boom, contracts covering the steel have already been reported and no new sizable projects are awaiting bids. The most comforting reports come from the agricultural implement interests, whose plans are to buy steel soon for more than double their requirements of the previous year.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.25c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, cold rolled, one pass, 4.50c.; galvanized sheets, No. 28, 5.50c.; black corrugated sheets, 4.65c.; galvanized, 5.65c.; cold-rolled rounds, shafting and screw stock, 3.70c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, ⅞ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, squares, $3.50; hexagons, blank or tapped, $4 off list.

Old Material.—The market for old material is still extremely quiet, the mills still refusing to buy at present prices. Dealers have faith in the market and are paying good prices for railroad lists, which are holding up well. However, very little else is happening. Prices are generally unchanged. New lists include: Louisville & Nashville, 8200 tons; Atchison, Topeka & Santa Fe, 4000 tons; Chicago & Alton, 1500 tons; Kansas City, Mexico & Orient, 300 tons; Texas & Pacific, 600 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

	Per Gross Ton	
Iron rails	$14.00 to	$14.50
Rails for rolling	18.00 to	18.50
Steel rails less than 3 ft.	18.50 to	19.00
Relaying rails, 60 lb. and under	24.00 to	25.00
Relaying rails, 70 lb. and over	30.00 to	30.50
Cast iron car wheels	17.50 to	18.00
Heavy melting steel	15.00 to	15.50
Heavy shoveling steel	14.50 to	15.00
Frogs, switches and guards cut apart	17.00 to	17.50
Railroad springs	18.00 to	18.50
Heavy axles and tire turnings	11.50 to	12.00
No. 1 locomotive tires	16.50 to	17.00
	Per Net Ton	
Steel angle bars	15.00 to	15.50
Steel car axles	18.00 to	18.50
Iron car axles	24.00 to	24.50
Wrought iron bars and transoms	19.00 to	19.50
No. 1 railroad wrought	13.25 to	13.75
No. 2 railroad wrought	13.00 to	13.50
Cast iron borings	10.00 to	10.50
No. 1 busheling	11.50 to	12.00
No. 1 railroad cast	16.00 to	16.50
No. 1 machinery cast	17.50 to	18.00
Railroad malleable	14.00 to	14.50
Machine shop turnings	8.00 to	8.50
Champion bundled sheets	9.00 to	9.50

Coke.—Foundry grades seem to be in better demand, with the St. Louis Coke & Iron Co. reporting that shipments are well in excess of current output and that their stock piles are being drawn upon. There is a better demand for domestic grades.

Birmingham

Practically No Signs of Weakness in Iron or Steel

BIRMINGHAM, July 21.—Inquiries for pig iron are for both third and fourth quarters of the year. The claims are that $18.50 will be adhered to on No. 2 foundry, Birmingham base, for delivery during the next 60 days and $19 for the fourth quarter. Sales are still heard of on the $18 base. Furnace interests are not making a great effort to sell into the fourth quarter as yet and the $19 price has not been done. Production is being cut down, a second furnace going out this week. A third furnace will be blown out on the turn of the month and possibly a fourth. All are expected to be back in operation in September. Melt in the Birmingham territory has shown a little improvement. Soil pipe and fittings shops, which have been shut down for the past few weeks, are starting up again, ostensibly to fill contracts lately received. The pressure pipe shops are still operating steadily though belief is that bulk of business for summer has been placed. Other iron-melting plants of the district are doing fairly well, but in practically all instances purchases of iron have been made to meet probable needs for a few weeks ahead. All of the independent iron manufacturing companies of the district have participated in the recent selling and are now awaiting the buying for the remainder of the year.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$18.00 to $19.00
No. 1 foundry, 2.25 to 2.75 sil.	19.00 to 19.50
Basic	18.50 to 19.50
Charcoal, warm blast	32.00

Cast Iron Pipe.—Numerous lettings have been received lately by the manufacturers of cast iron pressure pipe and quotations are firm at $40 per ton, for 6-in. and over. One of the pipe companies considers the peak of business for the year as passed but that winter buying will start at once. Buying for the first six months of the year was "spotty," and to a considerable extent larger sized pipe was demanded. An advance in pipe prices appears imminent here.

Finished Steel.—With all plants operating practically at the rate of recent weeks, and shipments not much, if any, behind production, and quotations being maintained, the steel market here is considered steady. Soft steel bars are quoted at 2.15c. to 2.25c., Birmingham.

Old Material.—The market is not active. Dealers, however, continue the policy of keeping yards ready for any and all demands. Quotations for the week are unsteady but no change is noted. Heavy melting steel still is quoted at $13.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	16.00 to 17.00
Iron axles	16.00 to 17.00
Steel rails	13.00 to 14.00
No. 1 cast	16.00 to 16.50
Tramcar wheels	16.50 to 17.00
Car wheels	15.00 to 16.00
Stove plate	13.00 to 13.50
Machine shop turnings	7.00 to 8.00
Cast iron borings	7.00 to 8.00
Rails for rolling	16.50 to 17.00

Mechanical stokers sold in June by 13 establishments are reported by the Department of Commerce at 128, of a total of 44,095 hp. This is the smallest rating since January, but is considerably larger than the 35,549 hp. of June, 1924. The recent peak was reached in March, with 71,099 hp.

Buffalo

Advance in Steel Scrap But Markets Relatively Quiet

BUFFALO, July 21.—Inquiry for the week was light, a total of 3000 tons representing it. The Gould Coupler Co. seeks 500 tons of malleable, and this is the most sizable offering appearing. Most of the selling is confined to the third quarter. The going price is represented to be $19 base, and, generally speaking, the merchant furnaces will adhere to this price. Sellers believe that trade is gradually improving and they look for a brisk run of business following the summer period.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25	$18.75 to $19.00
No. 2X foundry, sil. 2.25 to 2.75	19.00 to 19.50
No. 1 foundry, sil. 2.75 to 3.25	19.50 to 20.50
Malleable, sil. up to 2.25	19.00
Basic	18.50
Lake Superior charcoal	29.28

Finished Iron and Steel.—Business is fairly good with few outstanding features. The inquiry for sheets has improved, with the Buffalo equivalent of 3.15c., Pittsburgh, being quoted on black and the Buffalo equivalent of 4.20c., Pittsburgh, on galvanized. Wire business is holding up well with jobbers restocking on poultry netting and wire cloth a little heavier. Fifteen miles of new roads call for 300 tons of mesh, which has been let. Wire makers are experiencing the best operation in the district, 80 per cent.

Warehouse prices are being quoted as follows: Steel bars, 3.25c.; steel shapes, 3.35c.; steel plates, 3.35c.; No. 10 blue annealed sheets, 3.80c.; No. 28 black sheets, 4.75c.; No. 28 galvanized, 5.45c.; cold rolled shafts, 4.40c.; cold rolled rounds, 3.95c.; wire nails, 4c.; black wire, 4.05c.

Old Material.—Quietness prevails. Considerable activity is reported in turnings and borings in outside centers. Pittsburgh is offering $14.50 for machine shop turnings and Cleveland $14 for shovelings, and some material is reported going out of here for these points. Dealers are the purchasers. Heavy melting steel has stiffened a little and is quotable now at $16.50 to $17; no buying is taking place here, except an occasional lot obtainable at a bargain price. Country scrap is coming in more freely. Market for stove plate is firm, with one local consumer still picking up available carloads and paying $15.25. Specialties are dull with the exception of an occasional car of low phosphorus iron moving at $19 to $19.50.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$16.50 to $17.00
Low phosphorus	18.50 to 19.50
No. 1 railroad wrought	14.00 to 14.50
Car wheels	16.00 to 16.50
Machine shop turnings	11.00 to 11.50
Cast iron borings	11.00 to 11.50
No. 1 busheling	15.00 to 15.50
Stove plate	15.25
Grate bars	14.25 to 14.75
Bundled sheets	15.00 to 15.50
Hydraulic compressed	14.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	17.00 to 17.50
No. 1 cast scrap	16.50 to 17.00
Iron axles	26.00 to 27.00
Steel axles	17.00 to 17.50

Boston

Spurt in Pig Iron Buying With Buffalo Product Somewhat Firmer

BOSTON, July 21.—Quite a spurt in pig iron buying in this territory was noted the past week, aggregate sales approximating 10,000 tons, largely Buffalo district and foreign iron for delivery over the next three months. With the purchase, possibly today, of 1000 tons No. 2X by a Vermont foundry, sales will easily top the combined bookings during the previous two weeks. The improved business is attributed to a more encouraging outlook in the machinery industry, particularly in textile machinery. With the increased sales have come firmer prices on Buffalo iron. A Buffalo district steel mill, heretofore soliciting business on a basis of $23.16 to $23.41 delivered for No. 2 plain, with 25c. differentials, has withdrawn quotations and is now asking $23.91 with full differentials. Other Buffalo interests meeting the steel mill prices also are back on a $23.91 basis. Numerous foundries are sounding out the market without the formality of open inquiry, and it is presumed a substantial tonnage will be purchased this week.

We quote delivered prices on the basis of the latest sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$23.65 to $24.15
East. Penn., sil. 2.25 to 2.75	24.15 to 24.65
Buffalo, sil. 1.75 to 2.25	23.91
Buffalo, sil. 2.25 to 2.75	24.41
Virginia, sil. 1.75 to 2.25	28.42 to 23.92
Virginia, sil. 2.25 to 2.75	28.92 to 30.42
Alabama, sil. 1.75 to 2.25	28.10
Alabama, sil. 2.25 to 2.75	28.60

Coke.—With a more active demand for pig iron has come an improvement in by-product foundry coke consumption. Oven shipments, which were below those to June 15, 1925, and July 15, 1924, now average about 25 per cent heavier, respectively. Producers are not only securing requests for prompt shipments, but more extended datings as well. In addition, producers are doing a much larger domestic coke business than they did last summer. The reports that the Everett, Mass., plant of the New England Coal & Coke Co. is operating at 50 per cent of capacity are erroneous. It is running full and has done so throughout 1925. That company and the Providence Gas Co. are selling by-product foundry coke at $11.50 a ton delivered in New England.

Old Material.—Old material is moving more freely, but only slightly so. Prices, with the exception of those for bundled skeleton, show little variation from those quoted a week ago. Long bundled skeleton is higher, largely on the strength of Worcester, Mass., buying. Heavy melting steel at $11.50 to $12 on cars shipping point, is moving to eastern Pennsylvania and Steubenville, and at $1 to $1.50 less, to Bridgeport, Conn. Machine shop turnings are selling at $8.25 to $8.75 on cars, with most transactions at or close to $8.65, and Pennsylvania is also taking shafting at $19 to $19.50 on cars, while a Portland, Me., rolling mill is evincing some interest in street car axles at around $18 on cars. Chemical boring prices take a wide range, owing to a wide spread in the quality of material offered. Sales are reported at $10.50 to $10.85 on cars and others at better than $11, while some houses will not pay more than $10. Textile machinery cast, on a high freight, sold the past week as high as $21.50 delivered, but $20 to $21 is nearer the average sale price. Odd lots of No. 1 machinery at $19 to $19.50 delivered are included in recent transactions. Practically no market exists for No. 2 machinery cast.

The following prices are for gross ton lots delivered consuming points:

Textile cast	$20.00 to $21.00
No. 1 machinery cast	19.00 to 19.50
No. 2 machinery cast	15.50 to 16.50
Stove plates	13.00 to 13.50
Railroad malleable	19.00 to 19.50

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$11.50 to $12.00
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1-in. in diam., over 2 ft. long)	11.00 to 11.50
Machine shop turnings	8.25 to 8.75
Cast iron borings, chemical	10.50 to 11.00
Cast iron borings, rolling mill	8.50 to 8.75
Blast furnace borings and turnings	7.50 to 8.00
Forged scrap	10.00 to 10.50
Bundled skeleton, long	9.25 to 9.75
Forged flashings	9.50 to 10.00
Bundled cotton ties, long	8.00 to 8.50
Bundled cotton ties, short	10.00 to 10.50
Shaftings	19.00 to 19.50
Street car axles	18.00 to 18.50
Rails for rerolling	12.00 to 12.50
Scrap rails	11.00 to 11.50

For the construction of about 15 miles of railroad from San Bernardino to Lake Arrowhead plans are being made by D. W. Pontius, vice-president Pacific Electric Railway Co., Los Angeles, Cal., and J. Benton Van Nuys, president Lake Arrowhead Co., San Bernardino, Cal.

Cleveland

More Life in Pig Iron—Steel Prices Resist Pressure

CLEVELAND, July 21.—New demand for finished steel shows a slight gain over last month. Steel bars are fairly active but buying is almost entirely in small lots. It seems to be the policy of most consumers to keep their inventories down low and quick shipment is wanted on nearly all orders. While the demand from the automotive industry is not so heavy as a few weeks ago, the motor car production has kept up surprisingly well this month, few car builders having made more than slight reductions. Other industries report somewhat better operations. Some of the agricultural implement manufacturers in this territory have covered for their usual requirements in steel bars for the third quarter. As some of these carried over steel from the second quarter, it is believed that the new contracts will cover them well through the year. Steel bar prices have withstood considerable pressure the past week from consumers who have attempted to secure the 1.90c. price at which leading Detroit automobile companies were able to buy. Some of the Detroit business went to the Buffalo territory. Locally the steel bar market is firm at 2c. While some of the mills might go to 1.90c. for a large tonnage for immediate rolling, they will not shade the 2c. price for a lot of a few hundred tons. Plates are holding firmly to 1.90c. and structural material to 2c. New work in the building field is coming out rather slowly. Another inquiry for a Lake boat requiring 3000 tons of steel has come out, making about half a dozen vessels that are pending in Lake shipyards.

Pig Iron.—The market has taken on more life the past week and prices are firmer. On foundry iron the $18 price which came out in the Valley district a week ago has disappeared and the Valley market is now holding firmly to $18.50. One Lake furnace, which has been going to $18.50 for foundry and malleable grades for shipment to some points is now trying to hold to a $19 basis. In Cleveland the market is quiet, with the price unchanged at $19.50 at furnace for foundry and malleable iron for local delivery. One local interest sold 11,000 tons during the week and another reports sales of 5000 tons, with inquiries pending aggregating 8000 tons. Sales during the week included two or three 1000 ton lots. Some of the new business is in contracts for the fourth quarter and some in additional iron for the third quarter. Most of the buying has been outside of the automotive industry. The first round lot inquiry for basic iron that has appeared for some time has come from the Andrews Steel Co., which has inquired for 30,000 tons for the third quarter, and may purchase a like amount for the fourth quarter. Shipping orders continue fairly heavy and stocks with most consumers are reported low.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 from Birmingham:

Basic, Valley furnace	$18.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	20.00
Southern fdy., sil. 1.75 to 2.25....$23.51 to	26.01
Malleable	20.00
Ohio silvery, 8 per cent	29.02
Standard low phos., Valley furnace	28.00

Iron Ore.—The market has become somewhat more active in small lot sales. One producer's business aggregated 60,000 tons. Ore on hand at furnaces July 1 amounted to 20,396,779 tons, according to the report of the Lake Superior Iron Ore Association. The total on hand at furnaces and Lake Erie docks July 1 was 25,403,931 tons, as compared with 26,409,713 tons on the same day a year ago. The consumption of Lake Superior ore during June was 3,862,953 tons, a decrease of 494,538 tons as compared with May. Interior furnaces consumed 1,916,053 tons, a decrease of 312,339 tons, lake front furnaces consuming 1,740,442 tons, a decrease of 190,573 tons, and all rail furnaces consuming 109,855 tons, a decrease of 5738 tons. Eastern furnaces consumed 96,603 tons, or a gain of 14,112 tons, as compared with May. On June 30 there were 164 furnaces using Lake ore in blast, a decrease of six furnaces for the month.

Semi-Finished Steel.—Efforts of consumers to buy sheet bars below $35, Youngstown, have proved unsuccessful and some of the mills are taking the material at that price on contracts extending over from the second quarter. No new buying is reported. Mills are holding to the same price for billets and slabs.

Sheets.—The volume of business shows some improvement although buying is mostly for early needs. The extremely low prices that were quoted recently are no longer in evidence and the market is fairly firm. On black sheets 3.10c. still is being quoted although some of the leading mills are holding to 3.15c. Blue annealed sheets range from 2.25c. to 2.30c. and galvanized sheets are firm at 4.20c.

Reinforcing Bars.—The only order of any size placed during the week was for 430 tons for the Ohio Bell Telephone Co. building, Cleveland, which was taken by the Concrete Steel Co. New inquiry is light. The common range on rail steel bars is 1.80c. to 1.90c.

Bolts, Nuts and Rivets.—Bolt and nut manufacturers continue to get a fair volume of specifications on contracts, but not much new business is coming out. Prices are firm. Rivets are quiet. Quotations on large rivets range from $2.50 to $2.60. Small rivets are somewhat firmer, although large buyers can still place orders at 70, 10 and 10 per cent off list.

Warehouse Business.—Orders for steel out of stocks show a gain and are fairly good. Much of the demand is coming from consumers who are carrying low stocks and are depending on warehouses when they want material for quick delivery. Prices are well maintained.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 3.90c.; No. 28 galvanized sheets, 5.10c.; No. 10 blue annealed sheets, 3.10c.; cold-rolled rounds and hexagons, 3.80c.; flats and squares, 4.30c.; hoops and bands, 3.85c.; No. 9 annealed wire, $3 per 100 lb.; No. 9 galvanized wire, $3.45 per 100 lb.; common wire nails, $3 base per 100 lb.

Coke.—The coke market is slightly firmer, due apparently to the possibility of an anthracite coal strike, but the range of prices is unchanged. Standard Connellsville foundry coke is commonly quoted at $4 to $4.50, although some brands are held at $5.

Old Material.—The market is somewhat firmer, but continues dull. Dealers claim they have to pay about the same price for scrap as the mills are willing to pay. There is little activity, although a Canton consumer purchased borings and turnings during the week at reported prices of $14 or $14.25, and dealers are offering $13.75 for those grades to cover Canton orders. A local mill is offering $16.50 delivered for heavy melting steel, but little material is available at this price. In fact, ruling market quotations are bringing out very little scrap. Heavy melting steel has advanced about 50c. a ton, and there has been a slight advance in the maximum quotations on borings and turnings and some other grades.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$16.00 to $16.50
Rails for rolling	15.00 to 15.50
Rails under 3 ft.	18.50 to 19.00
Low phosphorus melting	17.00 to 17.25
Cast iron borings	13.00 to 13.50
Machine shop turnings	13.00 to 13.50
Mixed borings and short turnings	13.00 to 13.50
Compressed sheet steel	13.50 to 14.00
Railroad wrought	12.00 to 12.25
Railroad malleable	17.75 to 18.00
Light bundled sheet stampings	11.00 to 11.50
Steel axle turnings	14.50 to 15.00
No. 1 cast	17.75 to 18.00
No. 1 busheling	13.00 to 13.50
Drop forge flashings	12.00 to 12.50
Railroad grate bars	13.25 to 13.50
Stove plate	13.25 to 13.50
Pipes and flues	10.00 to 10.25

Razing Emma Blast Furnace at Cleveland

CLEVELAND, July 21.—The American Steel & Wire Co. has started to tear down its Emma blast furnace in Cleveland. This is an antiquated stack that has been operated very little in recent years, the last time during the war time period. This furnace, originally owned by the Union Rolling Mill Co., was purchased by the American Steel & Wire Co. about 27 years ago.

Philadelphia

July Business in Fair Volume—To Adjust Wages at Lukens Mill

PHILADELPHIA, July 21.—The first intimation of the possibility of wage reductions in the steel industry has come from the Lukens Steel Co., Coatesville, Pa., which has posted notices that a wage adjustment will go into effect Aug. 1. This announcement was made following a sharp reduction in the mill forces, about 400 men, or 25 per cent of the entire working force, being laid off last Saturday. The exact amount of the contemplated wage reduction has not been decided, according to officials of the company, who say that a definite decision will be reached some time prior to the first of the month. The hourly rate for common labor in the Lukens mill is 32 cents for a 10 hr. day. Whatever the wage reduction is to be it will be of wide effect, embracing salaried workers as well as the men in operating departments. No other Eastern steel company has seriously considered wage reductions, but it is no secret that the matter has been discussed by some companies as a means of cutting down the losses which many are incurring each month, due to their inability to get prices for their products that cover their costs. Officials of other steel companies admit that the Lukens experiment will be watched with interest, but they are not yet prepared to say that they are apt to take similar action.

July steel business is holding up at a fairly good rate. It would not be surprising if total sales this month in some offices would equal, or possibly exceed, those of June.

Pig Iron.—There have been sales of a few thousand tons of domestic iron and about the same amount of foreign iron within the week. Prices are no higher. Most of the furnaces are asking a base price of $20.50, but occasional sales are being made at $20, base, and the fact that foreign iron, including the best grades of Indian iron, are being offered at $20 to $20.50, c.i.f. Philadelphia, makes it difficult for eastern Pennsylvania furnaces to advance their prices. Some consumers are not fully covered for third quarter, and it is these buyers who are furnishing most of the current business, there being little interest in fourth quarter. It is expected, however, that fourth quarter inquiry will develop soon and the furnaces will be in a somewhat better position than they were on third quarter business, as there is less iron being produced in this district.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rate varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$20.76 to $21.63
East. Pa. 2X, 2.25 to 2.75 sil.	21.26 to 22.13
East. Pa. No. 1X	21.76 to 22.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	28.67 to 29.17
Virginia No. 2X, 2.25 to 2.75 sil.	29.17 to 29.67
Basic delivery eastern Pa.	21.50 to 22.00
Gray forge	21.50 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	22.00 to 23.00
Copper bearing low phos. (f.o.b. furnace)	25.00 to 25.50

Ferroalloys.—Carload buying for prompt shipment is giving the ferromanganese market a little more activity. Sales are being made by the domestic producer and by importers at $115, furnace or seaboard. The Lavino Furnace Co. is now operating only the Marietta furnace on ferromanganese, but the Sheridan stack is being put in shape and will be blown in early in August.

Billets.—A mill in the Pittsburgh district has become quite active in this district and concessions are reported to have been offered. Nominally the market remains at $35 for rerolling billets and at $40 for forging billets, with freight from Pittsburgh added, but slightly less than these figures might be done if a buyer had an attractive tonnage to place.

Plates.—The Pennsylvania Railroad has ordered its third quarter requirements of plates, buying about 4000 tons at the equivalent of 1.80c., Pittsburgh. The Reading Railroad also bought 1500 tons. The Pennsylvania business was divided between Pittsburgh and Eastern mills. Most of the plate orders are being put on mill books at 1.85c. and 1.90c., Pittsburgh. Business is maintaining about the same volume as in June, some of the mills operating at 40 to 50 per cent.

Structural Shapes.—A mill which raised its price to 2c., Pittsburgh, is getting less business than before the advance, which leads to the conclusion that a considerable portion of current structural steel tonnage is being placed at 1.90c., Pittsburgh. The City of Philadelphia is asking for bids on the third section of the Broad Street subway, requiring 12,000 tons of steel. The Scottish Rite Temple, Philadelphia Consistory, 2100 tons, went to the Shoemaker Bridge Co.

Bars.—Consumers are paying without question 2c., Pittsburgh, for steel bars. Orders are mostly for small lots, but the total is in keeping with the volume of the past month or two. Demand for bar iron is light and the price quoted by Eastern mills remains at 2.22c., Philadelphia.

Sheets.—Many of the sheet mills are firmly adhering to the new sheet prices, which are 4.20c. on galvanized, 3.15c. on black and 2.30c. on blue annealed, but there are still some mills that are selling slightly below these prices. On black sheets in particular it appears that 3.10c. is being quite commonly done.

Warehouse Business.—Demand for steel out of stock shows a decided improvement. We quote for local delivery as follows:

Soft steel bars and small shapes, 2.90c.; iron bars (except bands), 2.90c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 2.90c.; tank steel plates, ⅜ in., 3.05c. to 3.10c.; blue annealed steel sheets, No. 10 gage, 3.35c.; black sheets, No. 28 gage, 4.35c.; galvanized sheets, No. 28 gage, 5.45c.; equare, twisted and deformed steel bars, 2.85c.; structural shapes, 2.80c.; diamond pattern plates, ¼-in., 5.30c.; ⅜-in., 5.50c.; spring steel, 5c.; rounds and hexagons, cold-rolled steel, 4c.; squares and flats, cold-rolled steel, 4.50c.; steel hoops, 4c. base; steel bands, No. 12 gage to ⅞ in., inclusive, 3.75c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 6.50c.

Imports.—Twenty-five hundred tons of Indian pig iron came in last week; 20 tons came from Sweden. Ferromanganese receipts amounted to 100 tons from Germany and 75 tons from England. Rolled iron and steel imports were small, being as follows: From Luxemburg, 190 tons of bars and 85 tons of structural steel; from Belgium, 99 tons of structural steel; from Sweden, 27 tons of iron.

Old Material.—Although the demand for scrap from consumers is not large, the market presents a tone of unusual firmness for mid-summer and prices tend higher. A structural steel mill has paid $16.50 and $16.75 for No. 1 heavy melting steel and will probably pay $17 before the end of the week because it had not been able to buy enough. A broker is paying $16.50 for delivery of steel scrap at a mill near Philadelphia. In view of this strong market it seems quite likely that any further inquiry will result in still higher quotations.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	$15.50 to $16.50
Scrap rails	15.50 to 16.50
Steel rails for rolling	17.50 to 18.00
No. 1 low phos. heavy 0.04 and under	20.50 to 21.50
Couplers and knuckles	20.00 to 20.50
Rolled steel wheels	20.00 to 20.50
Cast iron car wheels	17.00 to 17.50
No. 1 railroad wrought	17.50 to 18.50
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	14.50 to 15.00
Bundled sheets (for steel works)	13.50 to 14.00
Mixed borings and turnings (for blast furnace use)	12.00 to 13.00
Machine shop turnings (for steel works use)	13.50 to 14.00
Machine shop turnings (for rolling mill use)	13.50 to 14.00
Heavy axle turnings (or equivalent)	14.50 to 15.50
Cast borings (for steel works and rolling mill)	14.00
Cast borings (for chemical plant)	16.00 to 16.50
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel plants)	17.00
Railroad grate bars	14.00 to 14.50
Stove plate (for steel plant use)	14.00
Wrought iron and soft steel pipes and tubes (new specifications)	16.50
Shafting	23.00 to 24.00
Steel axles	23.00 to 24.00

SHEET STATISTICS

June Sales Exceeded Production and Shipments —First Time in Months

The monthly report of the National Association of Sheet and Tin Plate Manufacturers for June, which has just been issued, reflects a much more favorable situation than has been apparent in current observation. In June, sales of sheets by the independent manufacturers not only registered a substantial gain over those for May, but for the first time since last December they ran well ahead both of production and shipments, and unfilled orders, which have been decreasing steadily month by month since December, turned upward last month. Unfilled orders as of Dec. 31 last were 663,460 tons. At the end of May, they were down to 399,330 tons, while as of June 30, they amounted to 440,687 tons, a gain for last month of more than 41,000 tons. Unfilled orders at the end of June were not far from being double those of the corresponding date last year.

Apparently, some heed was given the oft-repeated suggestion that the rate of production was altogether too high in relation to actual demand. While in June, there was an indicated gain in the sales over those of the month before or approximately 100,000 tons, production increased less than 6000 tons.

The June report, figured in net tons, makes the following comparison with that for May and April and for June of last year:

	1925			1924
	June	May	April	June
Number of mills	699	699	701	686
Capacity per month	421,600	397,100	422,000	395,800
Per cent reporting	75.7	75.4	73.3	71.0
Sales	286,453	186,538	193,949	108,693
Production	266,290	260,470	280,082	114,807
Shipments	231,006	232,372	263,174	141,176
Unfilled orders	440,687	399,330	463,425	246,810
Unshipped stocks	80,938	81,462	86,235	82,465
Unsold stocks	51,614	52,051	51,264	45,776
	Percentages of Capacity			
Sales	92.8	62.3	60.6	38.7
Production	83.4	87.0	87.5	40.9
Shipments	74.9	77.6	82.2	50.2
Unfilled orders	142.8	133.4	144.7	87.9
Unshipped stocks	25.3	27.2	26.9	29.4
Unsold stocks	16.2	17.4	16.0	16.3

OHIO MILLS SHOW GAIN

Mahoning and Shenango Valley Interests Report Some Increased Operations

YOUNGSTOWN, July 21.—Schedules of Mahoning Valley properties show a moderate increase in active open hearth ingot capacity and a slight decline in finishing mill capacity. The Republic Iron & Steel Co. has added one open hearth, operating 10 of 15, and increasing the total to 37 active of 52 such units in the Mahoning area. The Steel Corporation is operating 19 of its 30 open hearths in this district. The Youngstown Sheet & Tube Co. and the Republic Iron & Steel Co. are operating their Bessemer converters on two turns. At the Ohio works of the Carnegie Steel Co. the Bessemer plant is producing at 85 per cent, and the New Castle, Pa., plant is operating at 60 per cent.

The Republic company has withdrawn the 14-16-in. bar mill at the Brown-Bonnell works from its active list, but is operating five light bar mills. The Waddell Steel Co. has suspended five sheet mills at Niles for annual inventory, but the Mahoning Valley Steel Co., inactive for two weeks, offsets this loss with the resumption of five mills. Of 127 sheet and jobbing mills in the Valley, 89 were scheduled for rolling this week.

The Trumbull Steel Co. brings into commission this week all of its tinplate capacity, excepting three mills at the Leavittsburg works. At its Canton property, the Falcon Tin Plate Co. is operating eight of nine mills.

The Sheet & Tube company has 22 sheet mills in this territory under power, and the Republic company eight. At its Girard works, the A. M. Byers Co., Pittsburgh, is operating one blast furnace, 45 puddle furnaces, a bar mill two turns and a plate mill one turn. The Republic plate mill was started again this week. Carnegie maintains its merchant bar mills in action in full, except the heavier units. It is operating four of six blast furnaces at the Ohio works and 11 of 15 open hearths.

In the Shenango Valley the production level of recent weeks is being sustained. The Standard Tank Car Co. is employing more than 400 men at its Sharon plant, the largest number in the last 12 months. The American Sheet & Tin Plate Co. is maintaining its Shenango Valley tin mills at 80 to 85 per cent.

Principal steel fabricators in this district, such as the Truscon Steel Co., General Fireproofing Co. and the Youngstown Pressed Steel Co., are operating close to capacity. The Commercial Shearing & Stamping Co. is experiencing the usual midsummer lull in demand.

The Kalman Steel Co. has expanded to an 80 per cent operating rate, from a recent low of 50 per cent, while the Ohio Automatic Sprinkler Co. has broadened to 85 per cent.

RAILROAD EQUIPMENT

Order for 1000 Tank Cars the Transaction of Importance

Freight cars in need of repair on July 1 totaled 198,468, or 8.5 per cent of the number on line, according to the Car Service Division, American Railway Association. This was a decrease of 2775 from June 15. Class I railroads on July 1 had 10,917 locomotives in need of repair, equal to 17.1 per cent of the number on line, this being a decrease of 734 from June 15. Sales and inquiries for railroad equipment include the following:

The Buffalo & Susquehanna Railroad is inquiring for 200 steel underframes for box cars.

The Erie Railroad is asking for prices on 25 steel underframes for cars.

The Baltimore & Ohio is in the market for steel underframes for 100 caboose cars.

The Fisher-Hurd Lumber Co. has bought 40 skeleton logging cars from the American Car & Foundry Co.

S. J. Mountz & Co. have bought 60 mine cars from the American Car & Foundry Co.

The Shamokin Coal Co. has ordered 100 mine cars from the American Car & Foundry Co.

The Interstate Public Service has bought 6 40-ton Hart convertible ballast cars from the American Car & Foundry Co.

The Phillips Petroleum Co. has leased 300 tank cars from the Standard Transit Co., to be built by the Standard Tank Car Co.

The St. Louis-San Francisco will repair 2600 freight cars and 30 passenger cars in its own shops.

F. M. Pease, Chicago, has ordered 1000 tank cars from the Bethlehem Steel Co.

The White Star Refining Co., Detroit, placed 53 tank cars with the Standard Tank Car Co.

The Seaboard Air Line is in the market for 30 caboose cars and 4 baggage and mail cars.

The Chesapeake & Ohio Railroad has given an order to the American Locomotive Co. for the repair of 20 large Mallet locomotives.

Recommends Accepting Ford Bid for Ships

WASHINGTON, July 21.—President L. C. Palmer of the Emergency Fleet Corporation today recommended to the Shipping Board that it accept the bid by the Ford Motor Co., Detroit, of $1,706,000 for the board's fleet of 200 steel vessels. This is the first of the group of idle ships which will be sold by the board. Immediately after the recommendation by President Palmer the board held a meeting but did not act, but it is believed it will act favorably on the recommendation at a meeting on Thursday of the present week. Counsel for the board has ruled that the bids made are legal. This was done on the strength of contests made by two of the bidders.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mill, base, per lb.....1.90c.
F.o.b. Chicago, base, per lb.....2.10c.

Structural Shapes

F.o.b. Pittsburgh mills, base, per lb.....2c.
F.o.b. Chicago, base, per lb.....2.10c.

Iron and Steel Bars

Soft steel bars f.o.b. P'gh mills, base, per lb.....2c.
Soft steel bars f.o.b. Chicago, base, per lb.....2.10c.
Reinforcing steel bars f.o.b. P'hg mills, base, per lb.....2c.
Rail steel bars, f.o.b. Chicago and f.o.b. Chicago district mills, base, per lb.....2.00c.
Common iron bars, f.o.b. Chicago, base, per lb.....1.95c.
Refined iron bars, f.o.b. P'hg mills, base, per lb.....3.00c.
Common iron bars, eastern Pa. mill, base, per lb.....2.10c.

Hot-Rolled Flats

Hoops, base, per lb., Pittsburgh.....2.40c.
Bands, base, per lb., Pittsburgh.....2.40c.
Strips, 6 in. and narrower, base, per lb., Pittsburgh.....2.40c.
Strips, 6 in. and wider, base, per lb., Pittsburgh.....2.20c.
Strips, 6 in. and narrower, Chicago.....2.40c. to 2.50c.
Strips, wider than 6 in., Chicago.....2.30c. to 2.40c.

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'hg mills, base, per lb..2.60c.
Screw stock and shafting, f.o.b. Chicago, base, per lb....2.60c.
Screw stock, base, per lb., Cleveland.....2.65c.
Shafting, ground, f.o.b. mill, base, per lb.....3.00c.
Strips, f.o.b. P'gh mills, base, per lb.....3.75c.
Strips, f.o.b. Cleveland mills, base, per lb.....3.75c.
Strips, f.o.b. delivered Chicago, base, per lb.....3.90c.
Strips, f.o.b. Worcester mills, base, per lb.....3.90c.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg.....$2.65
Galvanized nails, 1-in. and longer, base plus..... 2.00
Galvanized nails, shorter than 1 in., base plus..... 2.25
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.50
Annealed fence wire, base, per 100 lb..... 2.65
Spring wire, base, per 100 lb..... 3.50
Galvanized wire, No. 9, base, per 100 lb..... 3.10
Galvanized barbed, base, per 100 lb..... 3.35
Galvanized staples, base, per keg..... 3.35
Painted barbed wire, base, per 100 lb..... 3.10
Polished staples, base, per keg..... 3.10
Cement coated nails, base, per count keg..... 1.85
*Bale ties, carloads, to jobbers...75, 15 and 5 per cent off list
*Bale ties, carloads, to retailers...75, 10 and 6 per cent off list
Woven wire fence, base, per net ton to retailers.....$65

Chicago district mill prices are $2 per ton above the foregoing and Chicago delivered prices are $3 per ton above the prices f.o.b. Cleveland and Pittsburgh. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant, and Duluth, Minn., mills $2 a ton higher; Anderson, Ind., $1 higher.

*F.o.b. Cleveland.

Sheets

Blue Annealed
(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....2.25c. to 2.30c.
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills..2.40c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.15c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.30c. to 3.35c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh.....4.20c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....4.30c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.15c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.25c. to 3.40c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. Pittsburgh.....4.15c. to 4.25c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill..4.60c. to 4.75c.

Tin Plate

Standard cokes, per base box, f.o.b. Pittsburgh district mills $5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind..... 5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.20	20-lb. coating I. C.	$15.50
8-lb. coating I. C.	11.50	25-lb. coating I. C.	17.00
15-lb. coating I. C.	14.35	30-lb. coating I. C.	18.35
		40-lb. coating I. C.	20.35

Rivets

Large, f.o.b. P'hg and Cleveland mills, base, per 100 lb., $2.40 to $2.60
Large, f.o.b. Chicago, base, per 100 lb..... 2.60
Small, f.o.b. Pittsburgh.....70 and 10 per cent off list
Small, Cleveland ....70 and 10 to 70, 10 and 10 per cent off list
Small, Chicago .....70, 10 and 5 per cent off list

Rails and Track Equipment

(F.o.b.)

Rails, standard, per gross ton.....$43.00
Rails, light, billet, base, per lb.....1.60c. to 1.70c.
Rails, light rail steel, base, per lb.....1.50c. to 1.60c.
Spikes, ⅜ in. and larger, base, per 100 lb.....$2.80 to $3.10
Spikes, ½ in. and smaller, base, per 100 lb..... 3.00 to 3.35
Spikes, boat and barge, base, per 100 lb..... 3.25
Track bolts, all sizes, base, per 100 lb..... 3.90 to 4.25
Tie plates, per 100 lb..... 2.35 to 2.40
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+11	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1½ points, with supplementary discount of 5 per cent. On iron pipe, both black and galvanized, the preferentials to large jobbers are 1, 5 and 2½ per cent beyond the above discount.

NOTE—The above discounts on steel pipe also apply at Lorain, Ohio. Chicago district mills have a base 2 points less. Chicago delivered base 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point having the lowest rate to destination.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2⅝ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes
Cold Drawn

1 in.	60	3 in.	45
1¼ and 1½ in.	52	3¼ to 3½ in.	47
1¾ in.	36	4 in.	50
2 and 2¼ in.	31	4½, 5 and 6 in.	45
2½ and 2¾ in.	39		

Hot-Rolled

2 and 2¼ in.	34	3¼ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing (Old List)

Carbon under 0.30 base.....86 to 88 per cent off list
Carbon 0.30 to 0.40 base.....84 to 86 per cent off list
Plus usual differentials and extra for cutting. Warehouse discounts range higher.

Seamless Mechanical Tubing (New List)

Carbon 0.10 to 0.30 base.....55 per cent off list
Carbon 0.30 to 0.40 base.....50 per cent off list
Plus differentials for lengths over 18 ft. and for commercially exact lengths.

Prices of Iron and Steel Products and Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 51.50 per cent iron	$4.55
Old range non-Bessemer, 51½ per cent iron	4.40
Mesaba Bessemer, 51.50 per cent iron	4.40
Mesaba non-Bessemer, 51.50 per cent iron	4.25
High phosphorus iron, 51.50 per cent	4.15

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus	45c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates	$11.00 to $11.50
Chrome ore, Indian basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f., Atlantic seaboard	20.00 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	65c. to 70c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt	$2.90
Foundry coke, f.o.b. Connellsville prompt	3.75 to 4.25
Mine run steam coal, f.o.b. W. Pa. mines	1.50 to 2.00
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Mine run gas coal, f.o.b. W. Pa. mines	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines	1.35 to 1.40
Gas slack, f.o.b. W. Pa. mines	1.40 to 1.60

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid	115.00
Ferrosilicon, 50 per cent, delivered	82.50 to 85.00
Ferrosilicon, 75 per cent	145.00 to 147.50
Ferrotungsten, per lb. contained metal	1.00
Ferrochromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent	$32.00
Spiegeleisen, domestic, 16 to 19 per cent	31.00

Ferrosilicon, Bessemer, 10 per cent, $33; 11 per cent, $35; 12 per cent, $37; electric furnace ferrosilicon, 10 per cent, $38; furnace with an advance of $1 per unit for material above 10 per cent.

Silvery iron, 6 per cent, $24; 7 per cent, $25; 8 per cent, $25 to $26; 9 per cent, $27.50; 10 per cent, $29; 11 per cent, $31; 12 per cent, $33.

Fluxes and Refractories

Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, gravel, per net ton, f.o.b. Illinois and Kentucky mines	$16.00 to $16.50
No. 2 lump, per net ton	17.00 to 17.50
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton	18.00
Fluorspar, No. 1 ground bulk, 95 to 98 per cent calcium fluoride, not over 2½ per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	32.50

Per 1000 f.o.b. works:

Fire Clay	High Duty	Moderate Duty
Pennsylvania	$43.00 to $46.00	$40.00 to $43.00
Maryland	48.00 to 50.00	43.00 to 45.00
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	40.00 to 43.00	35.00 to 38.00
Ground fire clay, per ton		6.50 to 7.50
Silica Brick:		
Pennsylvania		46.00
Chicago		49.00
Birmingham		54.00
Silica clay, per ton		8.00 to 9.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		48.00

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

Machine bolts, small rolled threads..60 and 10 per cent off list
Machine bolts, all sizes, cut threads.
50, 10 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads.
50, 10 and 10 per cent off list
Carriage bolts, cut threads, all sizes..50 and 10 per cent off list
Eagle carriage bolts ..65 and 10 per cent off list
Lag bolts ..60, 10 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....50 and 10 per cent off list
Other style heads ..20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.,
45, 10 and 5 per cent off list
Larger and longer sizes..45, 10 and 5 per cent off list
Hot-pressed nuts, blank or tapped, square..4c. off list
Hot-pressed nuts, blank or tapped, hexagons....4.40c. off list
C.p.c. and t. square or hex. nuts, blank or tapped..4.10c. off list
Bolt ends with hot pressed nuts..50, 10 and 10 per cent off list
Bolt ends with cold pressed nuts...45, 10 and 5 per cent off list
Washers* ..6c. to 5.50c. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent less than above for less than car lots. On hot pressed and cold punched nuts the discount is 25c. less per 100 lb. than quoted above for less than car lots.

(Quoted with freight allowed within zone limits)

Semi-finished hex. nuts:
⅞ in. and smaller, U. S. S..80, 10 and 5 per cent off list
1 in. and larger, U. S. S..75, 10 and 5 per cent off list
Small sizes, S. A. E..80, 10, and 5 per cent off list
S. A. E., ⅞ in and larger....75, 10, 10 and 5 per cent off list
Stove bolts in packages..80, 10 and 5 per cent off list
Stove bolts in bulk..80, 10, 5 and 2½ per cent off list
Tire bolts ..50, 10 and 5 per cent off list

Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)

(To jobbers and consumers in large quantities)

	Per 100 Net S. A. E.	Per 100 Net U. S. S.		Per 100 Net S. A. E.	Per 100 Net U. S. S.
¼-in.	$0.44	$0.44	¾-in.	$2.35	$2.40
5/16-in.	.515	.515	⅞-in.	3.60	3.60
⅜-in.	.62	.66	1-in.	5.65	5.80
7/16-in.	.79	.90	1⅛-in.	8.90	8.90
½-in.	1.01	1.05	1¼-in.	12.60	13.10
9/16-in.	1.38	1.42	1⅜-in.	18.35	18.35
⅝-in.	1.70	1.73	1½-in.	21.00	21.00

Larger sizes—Prices on application.

Cap and Set Screws

Freight allowed within zone limits)

Milled cap screws..80, 10 and 5 per cent off list
Milled standard set screws, case hardened,
80 and 10 per cent off list
Milled headless set screws, cut thread,
80 and 10 to 80 per cent off list
Upset hex. head cap screws, U. S. S. Thread,
80, 10, 10 and 5 per cent off list
Upset hex. cap screws, S. A. E. thread,
80, 10, 10 and 5 per cent off list
Upset set screws..80, 10, and 10 per cent off list
Milled studs ..75 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$35.00
Forging billets, ordinary	40.00
Forging billets, guaranteed	45.00
Sheet bars	35.00
Slabs	35.00
*Wire rods, common soft, base, No. 5 to ⅜-in.	45.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp grooved, per lb.	1.90c. to 2c.
Skelp, sheared, per lb.	1.90c. to 2c.
Skelp, universal, per lb.	1.90c. to 2c.

*Chicago mill base is $47. Cleveland mill base, $45.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100 lb.
2100*(½% Nickel, 10 to 20 per cent Carbon)	$3.00 to $3.25
2300 (3% Nickel)	4.50 to 4.75
2500 (5% Nickel)	6.00 to 6.25
3100 (Nickel Chromium)	3.50 to 3.65
3200 (Nickel Chromium)	5.50
3300 (Nickel Chromium)	7.50 to 7.75
3400 (Nickel Chromium)	6.50 to 6.75
5100 (Chromium Steel)	3.50
5200*(Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.25 to 4.50
6100 (Chromium Vanadium spring steel)	4.00 to 4.25
9250 (Silicon Manganese spring steel)	3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4.25 to 4.50
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for coal drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to comform to S. A. E. system.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
July	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
15.....	14.25	14.00	57.87½	8.35	8.00	7.52½	7.17½
16.....	14.25	14.00	57.80	8.35	8.00	7.52½	7.17½
17.....	14.37½	14.12½	58.37½	8.35	8.00	7.55	7.20
18.....	14.37½	14.12½	....	8.35	8.00	7.55	7.20
20.....	14.37½	14.12½	58.62½	8.35	8.00	7.60	7.25
21.....	14.37½	14.12½	58.50	8.35	8.00	7.60	7.25

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, July 21.

Copper is higher and the demand has been very good. Consumers are buying tin and this, together with a higher market in London, has added to values here. The lead market is steady, with a further advance by the leading producer. Zinc is fairly active and the price is above last week's quotation.

Copper.—The views of copper refiners are very firm. Sales so far this month are believed to be fully 200,000,000 lb., which presumably is in excess of the month's production. Considerable electrolytic copper was sold last week at 14.25c., delivered in the Connecticut valley, and late Thursday some of the leading producers put in effect an advance to 14.37½c., which by Friday had become general. Having booked all of the tonnage they cared to take this month, a few producers advanced their price to 14.50c., but as there is still sufficient copper available at 14.37½c. to supply all demands, the 14.50c. price has not yet been confirmed by sales. Producers now occupy a very satisfactory position in view of the curtailed output, as it seems quite likely that they will have no difficulty in selling all they are now producing. Reports from abroad are good, today's cables to one large interest conveying news of important sales in England, Germany and France.

Tin.—In the five business days ended last Saturday there were sales of fully 1000 tons of tin, most of which was bought by consumers. On the 15th a large tin plate producer bought a good quantity for August delivery, and buying was continued actively on the 16th, other tin plate mills taking tonnage. This week's market opened quietly on Monday and today there was little activity, about the only sales yesterday and today being made on the Metal Exchange. On Monday 58.25c. was bid on the Exchange, but no tin was obtainable at this price and bidders went up to 58.37½c., with sellers holding for 58.50c. for nearby positions. London cables reports of good business and advancing prices. Today's prices were as follows: Spot standard, £261 7s. 6d.; future standard, £263 17s. 6d.; spot Straits, £267 2s. 6d. The Singapore price was £269.

Lead.—The American Smelting & Refining Co. on Monday advanced its lead price from 8c. to 8.10c., New York, and late Tuesday put into effect a further advance to 8.20c. This company continues its policy of selling only to its regular customers at its announced price. In the outside market lead holds its position of a week ago, sales of at least 5000 tons having been made by one of the leading independents at 8c., St. Louis, or 8.35c., New York, although some sales have been made at 8.25c., New York. There is a fairly good demand for lead, and the outlook, from the viewpoint of producers, is fairly encouraging.

Zinc.—A gradual improvement in the volume of buying by consumers has brought greater strength to the zinc market and prices are higher than a week ago. Prime Western is readily sold at 7.25c., St. Louis. Producers are not commiting themselves far, as they evidently expect further price advances. If there should be an increase in the demand for galvanized products the zinc market would no doubt quickly reflect such improvement.

Antimony.—Seven or eight steamers bearing antimony from Europe and China are due to arrive this month and next, but most of this tonnage is reported to be under contract. Just how much the unsold portion amounts to is uncertain. While there is not much selling pressure, the market remains fairly easy with the price unchanged at 16.50c. per lb., duty paid, for July delivery.

Nickel.—Quoted prices on nickel are unchanged at 34c. for ingot and 35c. for shot. Electrolytic nickel, 99.75 per cent, is quoted at 38c.

Aluminum.—Virgin aluminum, delivered, is 27c. to 28c. per lb.

Old Metals.—All items are firm and demand is active. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	13.75
Copper, heavy and wire	12.75
Copper, light and bottoms	11.25
Heavy machine composition	10.50
Brass, heavy	8.50
Brass, light	7.50
No. 1 red brass or composition turnings	9.50
No. 1 yellow rod brass turnings	9.25
Lead, heavy	7.50
Lead, tea	6.75
Zinc	5.25
Cast aluminum	19.50
Sheet aluminum	19.50

Chicago

JULY 21.—Copper, tin and zinc have advanced, while lead and antimony have declined. In the first three metals trading for both spot and future delivery has improved. The lead business is good but offerings have been heavier than orders. Antimony has declined because of two foreign shipments, one of which has arrived at New York and another is about due. Among the old metals, grades of copper, brass and tin have advanced. We quote, in carload lots: Lake copper, 14.50c.; tin, 59.50c.; lead, 8.05c.; zinc, 7.30c.; in less than carload lots, antimony, 18c. On old metals we quote copper wire, crucible shapes and copper clips, 11.50c.; copper bottoms, 10c.; red brass, 8.75c.; yellow brass, 7.50c.; lead pipe, 6.75c.; zinc, 4.25c.; pewter, No. 1, 32c.; tin foil, 40c.; block tin, 45c.; all buying prices for less than carload lots.

SHEET STEEL

Eliminating Light Gages from Roofing Work—Stenciling Wasters

Bulletin No. 28 on the elimination of waste sizes of sheet steel is ready for issuance by the United States Department of Commerce, Washington. The publication not only places before the sheet industry the sheet steel simplification schedule adopted Jan. 1, but also emphasizes the gages and sizes of flat sheets which jobbers are expected to carry in stock.

With a view to having distributors educate customers to bring their requirements within this schedule, all users of sheets are urged to eliminate all sheets lighter than full No. 28 gage for roofing and exposed sheet metal work. Since the first of the year considerable progress has been made in bringing the requirements of the industry within the schedule. There is now general recognition of the necessity of eliminating gages which are too light for exposed work.

The action of the industry in cooperation with the Department of Commerce comes at an opportune time, practically coinciding with a practice soon to be inaugurated by the sheet mills, namely the stenciling of all galvanized seconds and wasters as such. The indiscriminate sale of such material has given the sheet roofing industry a "black eye" and proper identification through stenciling should provide the necessary remedy. It is pointed out that there are legitimate uses for wasters, as, for example, in the manufacture of small blanks whereby the sheets are cut up with a loss of only about 20 per cent in discarded defective steel. It is intimated that if the plan of stenciling proves unsuccessful resort may be made to filing complaints with the Federal Trade Commission under the unfair practice provision of the trade commission act.

PERSONAL

Charles H. Dishman has been appointed district representative at Kansas City, Mo., for the National Enameling & Stamping Co. His office is located at 404 Ridge Arcade Building. For several years he has been with the Carnegie Steel Co., first in Pittsburgh and more recently representing the company, together with the Illinois Steel Co., Tennessee Coal, Iron & Railroad Co. and the American Sheet & Tin Plate Co., at New Orleans.

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Joseph Ewing has been appointed vice-president in charge of sales for the Simmons Co., maker of beds. He will maintain offices in New York and Chicago. Mr. Ewing has had a wide experience in sales activities and recently has been in business for himself as merchandising counsel.

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A. V. Spinosa, vice-president and general sales manager Consolidated Expanded Metal Companies, Braddock, Pa., has resigned and Thomas R. Herbest, Jr., who for 11 years has established and operated branch distributing offices for the company in Pittsburgh, Philadelphia and New York, will succeed him.

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W. R. Janney, formerly with the Tin Decorating Co., Baltimore, has joined the W. F. Robertson Steel & Iron Co., Elwood Myers Co. division, Springfield, Ohio, as special representative in the can sales division. For many years he was in the manufacturing end of the business.

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I. P. Blanton was reelected president of the Belfont Steel & Wire Co., Ironton, Ohio, at the annual meeting of stockholders July 15. John C. Brown was reelected treasurer and T. J. Hayes, secretary. The following directors were chosen: I. P. Blanton, S. G. Gilfillan, I. A. Ryan, E. J. Merrill, Charles Horn, B. A. Wallingford, S. C. Peebles, W. C. Willard and J. C. Clutts.

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E. W. Arndt, formerly of the Duncan Foundry & Machinery Works, Alton, Ill., has been appointed superintendent of the foundry department of the Joshua Hendy Iron Works, Sunnyvale, Cal. Mr. Arndt will supervise the work of improving the present foundry, for which plans are now being prepared.

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F. Lee Norton has been elected president of the Belle City Mfg. Co., Racine, Wis., to fill the vacancy caused by the recent death of John W. Reid, Jr. Mr. Norton retired from active business a few years ago after having held consecutively the positions of sales manager, treasurer, vice-president and general manager of the J. I. Case Threshing Machine Co., Racine. He took charge of the Belle City business several months ago when Mr. Reid became ill.

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George K. Viall, since 1919 connected with the Chain Belt Co., Milwaukee, and previously with the Sivyer Steel Casting Co., has been promoted to take charge of the service division of the concrete mixer and paving machine department.

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Barney Nelson has resigned as factory manager of the American Forge & Machine Co., Canton, Ohio, and has taken charge of the forging division of Fairbanks, Morse & Co. at Beloit, Wis.

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William J. Miskella has opened an office and laboratory at 1164 West Twenty-second Street, Chicago, where he will specialize as a consulting engineer on lacquer, japan and enamel finishing problems. He was for many years branch manager of the DeVilbiss Mfg. Co. and president of the Lamberson Japanning Co.

John A. Topping, chairman Republic Iron & Steel Co., has had a 600-ft. Lake freight steamship named after him. The boat was built for the Columbia Steamship Co., which is allied with the Oglebay-Norton Co., Cleveland, and Mr. Topping witnessed the launching of the John A. Topping on July 18 at the yards of the Great Lakes Engineering Works, River Rouge, Mich.

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L. B. Armstrong has retired from the firm of Graham & Armstrong, dealers in oil well supplies, Long Beach, Cal., and the company name was changed to the Graham Supply Co.

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David J. Champion, president Champion Rivet Co., Cleveland, has been honored by Pope Pius, who conferred upon him the insignia of knight commander of St. Gregory the Great.

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Clark H. Minor, formerly vice-president of the International General Electric Co., has been elected president to succeed Anson W. Burchard, who has been both president and chairman of the board. Mr. Burchard will continue as chairman, but asked to be relieved of some of the duties of his double position. Mr. Minor has just returned from Europe, for which Mr. Burchard has just left.

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Loren Emery, formerly assistant merchandising manager of the International General Electric Co., has been made general merchandising manager, and R. G. Henderson, formerly manager, has been detailed for special promotion work.

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A. A. Heller, treasurer and general manager International Oxygen Co., Newark, N. J., has returned from an extensive trip abroad.

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George P. Fisher has resigned as foundry superintendent Whiting Corporation, Harvey, Ill., to become works manager St. Louis Steel Castings Co., St. Louis. Mr. Fisher is president of the Chicago Foundrymen's Club for the current year.

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T. V. Buckwalter, who has been chief engineer for the Timken Roller Bearing Co., was made vice-president in charge of engineering at the July meeting of directors.

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Robert B. Ohl, who formerly covered the New York metropolitan district for the Trumbull Steel Co., has been transferred to the New England territory, succeeding W. H. Perkins, who has resigned to take up new duties as manager of Lamb & Ritchie, Cambridge, Mass.

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Michael McNally, assistant superintendent of the open-hearth department, Tata Iron & Steel Co., Ltd., India, is spending several weeks in this country, chiefly at his former home at Sharpsville, Pa.

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Lo Pa Hong of Shanghai, China, general manager, Woo Ching Iron & Steel Works, Ltd., in trade circles regarded as "China's Rockefeller," sailed from New York, July 17, for Rome, Italy, where he will have an audience with the Pope.

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A. F. Huston, who was recently elected chairman of the board of directors of the Lukens Steel Co., Coatesville, Pa., after many years as president, was the recipient last week of a silver loving cup, suitably engraved, the gift of members of the sales organization.

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L. R. Stewart, manager of the structural steel division of the Bethlehem Steel Corporation in Philadelphia, is recuperating at Atlantic City, N. J., from an operation for appendicitis, and will be back at his desk in the Widener Building, Philadelphia, shortly.

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Charles F. Rand, New York, who is spending several weeks in Germany, will return in the latter part of August.

OBITUARY

RICHARD VLIET LINDABURY, chief counsel, director and member of the executive committee of the United States Steel Corporation, long distinguished in corporation councils and regarded by many as one of the foremost authorities on anti-trust laws and litigation, died on July 15 while taking his morning ride near his estate at Bernardsville, N. J. It is not known whether he died from the fall off his horse or from apoplexy.

R. V. LINDABURY

Born the son of a farmer at Peapack, N. J., in 1850, Mr. Lindabury began the practice of law in 1874, his education having been obtained in the only school he ever attended, the district school of Peapack. Early in life he was tutored in the classics by a clergyman who was interested in him. Later he entered a law office and started on the road which led through criminal and civil court trials in his earlier years into the corporation practice in which he was so signally successful. When the Government sought to dissolve the Steel Corporation in 1911. Mr. Lindabury as general counsel organized the defense and in the protracted litigation that ended on March 1, 1920, with the favorable decision of the Supreme Court, was masterly in marshaling argument and fact in favor of integration in the steel industry. He was counsel also for the Prudential Life Insurance Co., the American Can Co., Pennsylvania Railroad and other large interests. Honorary degrees were conferred on him by Rutgers College and Princeton University, and he was a trustee of Stevens Institute of Technology.

Judge Elbert H. Gary, who was en route for the South when told of Mr. Lindabury's death, made the following statement: "I am greatly shocked and heartbroken. Mr. Lindabury was a distinguished lawyer and was held in high respect by all who knew him. He was a splendid man, a staunch friend, an able counselor, wise, kindly and courageous. He was a highly valued member of our official family. He will be greatly missed by the many interests with which he was connected and by his personal friends."

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FRED SMITH, senior sales representative of Froment & Co., iron and steel merchants, 150 Bank Street, New York, was shot to death by bandits on July 17, while attempting to frustrate a payroll hold-up in the office of a customer. Mr. Smith was 59 years of age and had been with the Froment company since he was 14 years old. In New York trade and political circles he had a wide acquaintance, having been a member of the New York Board of Aldermen from 1916 to 1924 and one of the governors of the Republican Club of Brooklyn.

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EDWARD PAYSON BIGELOW, sales representative for the American Steel Foundries Co., New York, since its organization over 20 years ago, died on July 20 at his home in New York from apoplexy. Despite his 81 years Mr. Bigelow continued his activities with the company until his death. He was born at Malden-on-Hudson in 1843 and was studying at the United States Military Academy when the Civil War started. He was commissioned and served with the cavalry. At Antietam his horse was shot from under him and in falling disabled the young officer for further service. Mr. Bigelow was formerly one of the governors of the Lambs Club, New York, and served in that capacity for the Union League Club.

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WARREN WOOD, head of the Wood Drill Works, Paterson, N. J., died July 18, in the Memorial Hospital, Upper Montclair, N. J., following an operation.

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WILLIAM GRIFFIN, aged 59, superintendent of transportation and chief of the labor division of the Carnegie Steel Co. in the Youngstown district, died in that city July 21, following an operation. He had been connected with the Carnegie Steel Co. since 1915.

EXPORT TIN PLATE ACTIVE

Oil, Canning and Dairy Needs Bought by Japan —China Inquires for Rails

NEW YORK, July 21.—In export trade the Japanese market has developed a decided improvement in the past week to ten days and despite the adverse political and industrial situation in China, inquiries continue to appear from Chinese sources. Japanese purchasers have been particularly active in inquiry for and purchases of tin plate and black sheets. The sheet market, quiet for many months, has revived to the extent of purchases of several thousand tons of light gage sheets, estimated in some quarters to total between 10,000 and 12,000 tons. One exporter alone is understood to have placed with the leading interest about 4000 tons. Much of this business is reported to have been placed at between $83 and $84 per ton, c.i.f. Japan, although the British market is between $81 and $82 per ton, c.i.f., the difference in price apparently representing to the Japanese buyer the value in quality and delivery of the American product. A purchase of electrical sheets is also reported, the Shibaura Engineering Co. having awarded about 300 tons to Mitsui & Co.

Tin plate continues a prominent feature of trade with Japan, the leading export interests taking the major portion of the business. An oil company in Japan is in the market for 5400 boxes of oil can sizes. One export house in New York has booked about 2000 boxes of charcoal tin plate and received the award of the 1000 boxes of dairy plate in the market for several weeks. The purchase of tin plate recently reported to have been made by a large Japanese company is believed to have been a fishing and canning interest in northern Japan. The Toyo Seikan Kaisha (Oriental Can Co.) of Osaka has not yet placed its requirements for the ensuing year. The tin plate market is believed to be from 10c. to 15c. per base box higher than the British export market on tin plate.

The Imperial Government Railways in Japan are about to issue a call for bids on 81,200 tie plates, opening Aug. 6. A rail inquiry in the market from China calls for a large tonnage of relaying rails, heavy sections. It is understood that the award will be made either on relaying rails or new rails from a European maker, depending on price.

STEEL BARREL OUTPUT UP

Production for First Half of 1925 Exceeds Last Year by 35 Per Cent

WASHINGTON, July 21.—More than 3,000,000 steel barrels were manufactured during the first six months of 1925 in 35 plants operated by the 30 companies reporting production to the Department of Commerce. This represents a 35 per cent gain as compared with the same period in 1924 and indicates that a fair degree of prosperity is being experienced by the manufacturers represented in this report. More barrels were shipped during the six months just ended than were made in this period, whereas last year shipments were considerably behind actual production. Stocks on hand at the end of June totaled 54,000 bbl., as compared with unfilled orders amounting to more than 580,000 bbl.

NEW TRADE PUBLICATIONS

Uses of Ball Bearings.—New Departure Mfg. Co., Bristol, Conn. Data sheet No. 166 F. E., devoted to the use of ball bearings in an automatic oil burner for use in heating homes, schools and hospitals.

Diesel Engines.—De LaVergne Machine Co., 955 East 138th Street, New York. Booklet under title of "Dependable Power at Less Cost" outlines briefly the development of the company's Diesel engines, which since 1919 have been built only without compressors, and presents data relating to the adaptability, dependability and economy of these engines. The service organization of the company is mentioned and information on the remodeling of the company's air injection type of engine to the airless injection type is included. There are several full page illustrations of complete units, including plants in operation and a partial list of installations is presented. Mechanical details of design are given in other catalogs.

Steam Trap.—W. B. Connor Co., 223 West Thirty-third Street, New York, Catalog A of 12 pages, on the design, construction and method of operation of the ACE Corliss valve steam trap. The traps are made in sizes to accommodate 1400 to 33,500 lb. of water per hr.

Control of Regenerative Furnaces.—Morgan Construction Co., Worcester, Mass. Ten-page booklet featuring the Isley system of control for open-hearth and other regenerative furnaces, in which induced draft is used to obtain uniformity of conditions.

Non-ferrous Products.—The American Brass Co., Waterbury, Conn. Notices of new prices and extras on several non-ferrous products, making slight changes on sheet copper, seamless brass and copper tubes, drawn copper, etc. Printed on sheets for loose leaf binder.

Electric Trolley Wire.—Bridgeport Brass Co. Bridgeport, Conn. Catalog of 15 pages devoted to "Phono-Electric" wire for trolley and allied use on railroads, street railways, etc. It may be had in several varieties, as detailed. There are tables showing its tensile strength in comparison with other materials both in the American system of measurement and in the metric system. One page is devoted to the question of wear.

Gasoline Locomotives.—Vulcan Iron Works, Wilkes-Barre, Pa.—An 8-page bulletin, No. 102, featuring 16 and 20-ton gear driven gasoline locomotives. Specifications and general description of these two sizes are included as well as hauling capacity charts.

Calendar.—Eagle-Picher Lead Co., Cincinnati. Poster 14¼ by 27 in. with eagle on red, white and blue background. Calendar 8 x 11 in. on lower half of poster, three months on one sheet.

Calendar.—Wagner Electric Corporation, St. Louis. Poster 13¼ by 23¼ in. with calendars 5¼ x 7¾ in., arranged to show three months at a glance.

Gears.—Niles-Bement-Pond Co., 111 Broadway, New York. Booklet of 20 pages, 9 x 11 in., outlining the features of Maag gears. The method of generating these gears, which are available up to 40 ft. in diameter, is described and illustrated, and information given as to how they differ from standard gears. Ground gears, reduction units, helical and herringbone gears and spiral gears of Maag design are also briefly dealt with, and several applications of the gears are shown.

Turret Lathes.—Warner & Swasey Co., Cleveland. Booklet of eight pages under title of "Where to Look for Net Profits" presents actual examples of savings from use of the company's turret lathes in small, average and quantity lot production, respectively.

Pneumatic Die Cushions.—Marquette Tool & Mfg. Co., 319 West Ohio Street, Chicago. Booklet entitled "Short Cuts in Metal Drawing." Examples of the use of the company's die cushions and automatic pressure controls in sheet metal drawing and forming operations are given, representative installations being described and illustrated with numerous half-tones and line cuts.

Industrial Trucks, Tractors and Cranes.—Elwell-Parker Electric Co., Cleveland. Catalog No. 140, 40 pages, 8½ x 11 in. Aids to selection of haulage systems, and the operation and control of the company's machines are outlined and features of construction and specifications are given for various types of equipment built by the company. These include self-loading and Hi-Lo Tructors, general utility or platform Tructors, tractor Tructors, cranes and specials, such as tote can elevators, car wheel Tructor and tinplate Tructor. Dump bodies, skids and trailers are also shown.

Milling Machines.—The Kempsmith Mfg. Co., Milwaukee, Wis. Eight circulars, perforated for loose-leaf binding, describing the company's No. 2, 3, 4 and 5 plain maximillers, the No. 2, 3, 4 and 5 universal maximiller, the No. 2 and 4 vertical maximiller, a vertical spindle milling attachment, a circular milling attachment, a slotting attachment, a rack cutting attachment, type L, a heavy universal milling attachment. Illustrated. Total of 30 pages, 8½ x 11 in.

Cutting Tools.—Ziv Steel & Wire Co., 4423 West Kinzie Street, Chicago. Illustrated catalog covering Zivco and Wizard tools.

Compression Yoke Riveters.—Hanna Engineering works, Chicago. Bulletin R-205 illustrates and describes Hanna yoke riveters used in punching and riveting steel plates.

Twist Drills.—Buckeye Twist Drill Co., Alliance, Ohio. Catalog No. 7 gives complete data on twist drills, reamers and special tools. The booklet consists of 98 pages and a considerable part of the space is devoted to tables and miscellaneous information of interest and value to the user of twist drills.

Potentiometer Pyrometers.—Leeds & Northrup Co., Philadelphia. Catalog No. 87, a revision of the 1924 edition, describes the various equipment produced by this company. Its 55 pages are fully illustrated.

Electric Hoists.—Drake Electric Hoist Co., Inc., Friendship, N. Y. Leaflet of eight pages describing the company's form T, 2- and 3-ton monorail Moto Hoist, a feature of which is low headroom, and the form R, which is available in ¼, ½ and 1 ton capacities. The latter uses a standard stock motor of any make, with side wall suspension, and is suitable for outdoor use or for operation in dust or fumes.

The manufacture of die sets of high accuracy on a quantity production basis is described and illustrated in a 12-page booklet under the title of "Serving the Metal Stamping Industry," which is being issued by Danly Machine Specialties, Inc., 4911 Lincoln Avenue, Chicago. The steps in the production process, from the foundry through the machine shop, grinding and lapping and other departments is shown. The production of leader pins, bushings and dowel pins in the screw machine department is also dealt with, as well as the equipment used and the methods of heat treatment. The purpose of the booklet is to show that by planning and coordination, proper equipment and complete tooling, die sets, pins and bushings can be produced at lower cost than that at which many companies can make their own.

New Books Received

The Inter-Ally Debts and the United States. Pages 290, 6 x 9 in., illustrated. Published by the National Industrial Conference Board, Inc., 247 Park Avenue, New York. Price, $2.50.

Health Maintenance in Industry. By J. D. Hackett. Pages 488, 5¾ x 8½ in., illustrated. Published by A. W. Shaw Co., Huron and Erie Streets, Chicago. Price $5.

Transactions of the American Institute of Chemical Engineers. Vol. XVI, part 1, 1924. Pages 226, 6¼ x 9¼ in., illustrated. Published by the Institute of Chemical Engineers and for sale by D. Van Nostrand Co., 8 Warren Street, New York.

Standard Iron-Steel-Metal Directory. Fourth edition. Pages 1597, 6½ x 9½ in. Published by the Atlas Publishing Co., Inc., 150 Lafayette Street, New York. Price, $10.

A Course of Metallurgy for Engineers. By F. C. Thompson. Pages 240, 5½ x 8½ in., illustrated. Published by H. F. and F. Witherby, 326 High Holborn, London, W. C. 1.

Mining Directory of Minnesota, 1925. By John J. Craig. Pages 220, 4¾ x 6¾ in., illustrated. Issued by the University of Minnesota, School of Mines.

British Rolling Mill Practice

(*Continued from page 213*)

during the period of enormous railroad expansion, and can be considered only as specialty mills designed for huge output of a single product. It appears questionable whether such installations as the Gary rail plant would be repeated under present conditions, as freight rates enter so largely into total cost that rolled products must be manufactured to some extent at points of consumption.

Apart from the unique plant at Gary, probably the most truly typical American rail mill is that at the Lackawanna works of the Bethlehem Steel Co. This plant has some sentimental interest to Britishers, inasmuch as, in spite of considerable reconstruction generally, one of the mills is still operated by British engines sent out to America 40 years ago.

Plate Mills

While there are still many obsolete British plate mills, it can with perfect justification be claimed that the new plants laid down in recent years embody all the best features of modern practice. Manual effort has, in fact, been perhaps more completely eliminated in certain of these mills than in any similar foreign plant. This claim applies in particular to the shearing of plates, formerly a most arduous operation, but now entirely mechanical for all other than irregularly shaped or sketch plates. Naturally, in an individualistic country, differences of opinion exist, and various methods of shearing are in use, each of which has proved advantageous for particular conditions.

Describing a Scottish three-high plate mill unit, "which would appear to be laid down on practically ideal lines," the author concludes that "the breadth of vision rightly credited to mill-owners in America has not been lacking in developing the installation illustrated." This layout is shown herewith.

The plant incorporates many novel features, and is probably one of the most efficiently manned mills in existence, practically every known mechanical device for easing manual effort being incorporated. The mill is the first of its type in this country to be operated by a direct-connected reversing type mill motor, the primary object of this being to retain the advantages incidental to speed adjustment obtaining on reversing mills. This motor can take peak loads up to 13,000 hp.

Control by Three Men

The mill and all auxiliaries used in actual rolling of the plate are under such concentrated control that, from receipt of the slab from the reheating furnace bay to discharge of the rolled plate to the mangle, every movement is controlled by the roller in charge and two operators stationed in an overhead pulpit. Control of main mill motor, screwing gear, roller tables, manipulation of the slab, side adjustment of plate, etc., are allocated to the two pulpit men, the roller being left entirely free to direct rolling operations and gage the plate for thickness.

Under somewhat trying conditions, and with unusually mixed orders comprising a good proportion of thin plates, this mill has already produced 3000 tons of sheared plate per week. As the slab reheating furnaces have been proved fully capable of dealing with 1200 to 1500 tons of slabs each, per week, it will be understood that the above-stated output figure could be considerably increased.

In a comparative sense, this plant is most generously laid out. It is probable, however, that its limiting feature will be found in the space and facilities provided for dealing with finished plates prior to loading and dispatch. Experience has demonstrated that, with such a mill working at maximum capacity, abundance of storage space is a vital necessity.

The Weakest Link

Perhaps the class of mill which has received least consideration in this country is that devoted to production of the smaller rolled product. Many works otherwise well equipped have been quite unable economically to convert any considerable portion of their output into relatively small sizes.

Admittedly, considerable improvement has been made in the mechanical details of mill trains, methods of driving, etc., with some resultant increase of output. But the fundamental factors associated with feeding of hand-worked mills, and difficulties in dealing with long rolled lengths in their hot state, impose a definite limit of production on this class of mill.

The old belief that anything capable of turning around was good enough for rolling-mill work is fast disappearing, and scientifically designed machinery is now well established in the leading steelworks of most countries. Such design necessarily embraces the vital considerations of selection of materials of construction, accurate machining of working surfaces and, possibly more important still, adequate lubrication, with total inclosure wherever possible of lubricated surfaces.

Efficient Mill Driving

These provisions are necessarily reflected on the running of the mill, it now being possible to run a complete cogging mill train and its electrical equipment with a power consumption of about 220 kw. at light load, probably at least two-thirds of such power being absorbed by the flywheel converter set. The advantages resulting from complete electrification of main and auxiliary drives have been so fully discussed that further comment would appear to be superfluous.

In a new drive suggested, the usual double armature reversing type mill motor is split into two units, each of the two halves being attached direct to the top and bottom line of rolls respectively, without interposition of gearing. Successful development of this form of drive should prove useful in the operation of mills having roll grooves of such form as make differential speed inevitable. It would also be particularly applicable to the driving of plate finishing rolls, as the top roll could be kept in rotation, and at the same time balanced, thereby obviating the pronounced shock on the mill experienced with a "jump" roll, as commonly used.

Conflict Between Unit Costs and Varied Products

Such developments as have been described, while gratifying to many, are disturbing to others, who appear to be under the impression that for some inexplicable reason highly specialized plant is not well adapted to our moderate and varied output. The author would submit, however, that with a population which, in spite of the ravages of a great war, is estimated to have increased by 2,000,000 since 1914, an ever-increasing production must be maintained if such numbers are to be supported. This can be achieved only by unremitting attention to costs of production—a consideration to which the iron and steel producers of America, even with their great natural advantages, are now giving first place.

It has occurred to the author in reviewing the foregoing pages that, as the best of British plants only have been referred to, a stronger feeling of security than is intended may be conveyed. It appears necessary to emphasize that the plants referred to cover practically the whole field of modern development in this country, and as such cannot be considered excessively disproportionate to our needs.

From the necessary privileged position of business association with many of the schemes projected by competing nations, it can be definitely stated that, unless a more ruthless policy is practised in the scrapping of obsolete plant than has hitherto obtained, it can scarcely be hoped to produce at the cost necessary to insure sale of the bulk of the home product in the open markets of the world.

Discussion

Frank Anslow, Glasgow, Scotland, made mention of the steel plant of the Scottish Iron & Steel Co., which was erected during the period under review. This complete new steel works, with modern rolling mill plant, is entirely electrically driven from mixed pressure turbines supplied with steam from the adjacent iron works, i. e., an ordinary puddle iron works, as distinct from a blast furnace plant. Concerning continuous

rolling mills of the 9, 10 and 12-in. class and so on, the present bad state of trade has badly hit the proprietors of that class of mill. Many mills of that type roll cheaply so long as trade is good and the mills can be kept going. But the difficulty is to keep them going, and such mills become costly when trade is bad. Usually they then are shut down because the owners can not afford to keep them running.

On the other hand, smaller mills for producing comparatively small quantities of sections are run cheaply or comparatively cheaply under those conditions, but they can not rise to the occasion and produce the necessary output when trade is good. The difficulty is for the proprietors to lay down a mill which will operate economically under all conditions of reasonable output. The author showed a mill which could reasonably be expected to meet those conditions but, unfortunately, the figures indicated that the mill did not rise to the occasion, because the output was small and, as one would naturally expect, the cost of rolling was high. The author gave a figure of an average output of 17 to 18 tons per shift and a power consumption of 142 units.

Output and Unit Costs

A mill of that sort should be capable of producing a much larger output, and naturally in that case the cost would fall. The author quite rightly said that roll changing, dealing with so many different sections, causes a small output, but even under these conditions, in the particular case under discussion the figures were extremely low. In fact, in a large number of mills of which the speaker had knowledge the output is quite comfortably one-third better and the power consumption at least one-third less. It is possible to get much bigger outputs than the maximum output of 32.5 tons which the author gave in connection with high production. The great point was to get the output on the mills.

He showed by means of diagrams that a considerably bigger output makes an enormous difference in the cost of rolling. In times of bad trade, such as at present, it is necessary that mills be laid down suitable for producing reasonable outputs, not necessarily large specialized outputs, but reasonable outputs of wide ranges of sections, and also that arrangements should be made for getting power for driving the mills at a cheaper rate, on a basis to suit the varying conditions experienced.

Running Full Despite Bad Trade

Captain Lionel D. Whitehead, Tredegar, said his firm had had 18 or 19 years' experience of continuous rolling mills in this country, and it might be of interest to state that the Tredegar mill had run nearly 96 per cent full capacity for the past three years, when trade conditions were as bad as they could be. It is essential in continuous mill rolling to site the mill in the right place. A mistake has been made in this country by locating some of the continuous mills inland; that can not be afforded, from a trade point of view. It is necessary to have a cheap source of supply and facilities for export.

At Tredegar they have from 40 to 50 per cent of export trade, and consequently are able to keep the whole plant going. In addition to that they put down at Newport, in times of the very highest cost, a 12-in. hook mill which cost over £300,000 ($1,450,000), and yet that mill is operating economically and making as good a return as any mill in the country. There, again, its site is an important consideration. It is right on the docks; it receives cheap material from the inland works or from abroad; and it is able to send out its goods and put them on board at 1s. 6d. (36c.) a ton f.o.b. In such a position it is possible to do a good deal of work.

Insufficient attention has been paid to two simple but important points related to the plant—the provision of ample railroad facilities and ample stocking facilities. It is not the slightest use spending hundreds of thousands of pounds on the most economical plant for the production of steel unless free outlets are given for the product, and yet case after case can be seen in which that has not been done.

The author drew special attention to the continuous billet and sheet bar mill. In that direction there is a great opening for the English steel trade; not at the moment, because nobody wants to spend money at present, but they can look ahead and make their plans. There is no doubt that the continuous 18-in. billet mill as an adjunct to the finishing mills in steel works is a valuable asset. It produces a 1½-in. billet at the same cost as a 4-in. billet, except for the extra power (and interest) cost. It produces it with a minimum of waste, and it furnishes the finishing mill with what it wants—a small billet, cheap. There is no doubt that it is possible to roll down in a plant of that sort from 4 in. to 1½ in. at a fraction of the cost of the merchant mill, or starting with a bigger billet. There are places in this country where there is a demand for the introduction of a complete sheet bar mill with a 21-in. rolling mill behind. It is very difficult for a continuous mill to work inland when production is brought down to 70 or 80 per cent of maximum output; heavy capital charges begin to pile up, whereas in the older type of mill it was practicable to sink down to perhaps 40 per cent of output, with the same standing charges. But given an output in the right position and given a cheap supply of billets, it is possible to operate a mill of that type economically.

Lack of Steel a Vital Cost Factor

Lambert Rothera, London, indorsed the statement made by the author that there are many modern mills in Great Britain which are starved, owing to the lack of steel or lack of heating capacity, or something of that sort. All the mills the author mentioned, and one or two others, could deal with much bigger outputs if the steel were available. Obviously, if a high price is paid for a modern plant the way to reduce the overhead charges is to increase the output. The author referred to an interesting point in connection with reversing mills, in which the operation of the complete mill was done by two men. The operators screw down the live rolls by hand controllers and the mill is controlled by foot control.

Mr. Hand said he had not seen any of those mills in operation.

Mr. Rothera said that necessarily the actual control of the mill itself would not be quite so satisfactory as a hand control. The foot can be pushed down fairly hard and the mill be made to reverse, but when it comes to fine speed adjustment, it would be a difficult operation to do satisfactorily. It is quite an easy thing to do electrically. There would be no difficulty in arranging a foot control if it were considered worth while to install it. It certainly saves one, if not two, additional men.

Reference was made in the paper to the saving in manual effort, the aim of most modern plants; and as far as the main drive and the auxiliary drive are concerned, such effort has been reduced to a minimum. The control of the mill is done merely by setting a valve, and in the live roll gear there is a master controller which requires practically no manual effort at all. Referring to the plant of the Illinois Steel Co., where a reversing type stress is used on a three-high mill, he said that the same thing is probably in use at the Clyde mill.

A great deal of comment has been made in regard to that drive and its capital cost, but its advantages, certainly from the purchaser's point of view, outweigh the initial disadvantages. The author mentioned that one of the advantages is the overhead control, i.e., the slab can be entered at a slow speed and higher speeds used for the finishing passes. But that is only the beginning of the development of that type of drive for a three-high mill. There is not the slightest doubt that in future the first 8 or 9 or 10 passes on such a mill will be taken reversing, because it is difficult with a three-high mill, where the initial speed is rather high, to prevent the short slab throwing far out from the mill. In the particular mill under discussion the time of interval on the first passes would be between four and five sec., and on the later passes it would be between two and three sec. By using the mill reversing

on the first passes, at any rate, half the intervals would be saved and a bigger output from the mill would thus be obtained.

Avoiding Over-Heating

Not only that, but by reversing the roll necks would be improved considerably. At present, with continuous rolling, there is always a tendency to heat, but with a reversing mill the improved lubrication would produce a much bigger result and the necks would be smooth. At the same time the wear on the pinions would be reduced and the actual power consumption in rolling would also be slightly reduced, and owing to reduced friction the losses in the mill would be smaller. The output of 3000 tons of sheared plate per week was given by the author, but actually in a week when a trial was carried out over 4000 tons of plates were rolled on that particular mill.

With reference to a power consumption of 16 units for rolling sheets at the Carnegie Steel Co. plant, he said that in the plant in Scotland the units were given as 46, so that there is a discrepancy which at first sight called for comment. It would be interesting to know whether the figure obtained on the Carnegie plant were on the finished product or the actual output from the mill. The 46 units do not represent anything like the best figure obtained with the Scotch plant. When rolling out plates just over ½-in. thick at the rate of 25 tons an hour, the power consumption averaged about 27 units a ton. With increased output that figure would be materially reduced. With regard to the 44-in. reversing blooming mill, would the author advocate the use of such a large mill under the conditions of British practice? A 44-in. mill is much more expensive from a capital point of view than a smaller 38 or 40-in. mill, and there seems to be no point in going up to the larger diameter unless the drafting is increased to approach American practice.

Foreign Design and Construction

Harry B. Toy deplored the fact that most of the modern plants described were either designed abroad or supplied from abroad. He wondered many times whether that was the result of want of education on the part of British engineers, or whether it was that they neglected their opportunities.

In one of the illustrations is an arrangement for manipulating a plate, designed by Mr. Ellis. All who have seen that piece of mechanism will agree that it is a most wonderful machine. But the question arose whether it is necessary to turn the plate around to shear both sides. Although it is a beautiful machine, it takes a long time to do the work. Nearly 20 years ago David Colville told him that if he put down another plate mill he would never think of picking the plate up off the floor to shear it.

The speaker did not know whether some of the modern plants which have been erected during the last 10 years are really applicable to the work which can be provided for them in Great Britain. The universal mill is no doubt a wonderful mill, which has been in use on the Continent for years, but there are still difficulties with the universal mill in keeping the plate perfectly straight. When the plate is released from the straightener it assumes a little bit of a curve.

Mr. Colville told him that he had learned in the steel trade the importance of power and speed. It would be found if a visit were paid to most of the works in Great Britain that a number of them have installed engines and motors not sufficiently powerful to take the sections through in the shortest possible space of time. In the future there is a possible source of great economy in that direction if either an electric drive is installed or the plant so developed as to take the sections through in the least number of passes.

Much Modernizing to Be Done

Sir William H. Ellis, past president, felt that there is still a great amount of modernizing to be done in connection with mill work in Great Britain. Many directors and managers of steel works would be only too pleased to act in that direction were the state of the industry more favorable. In other words, the financial aspect is so difficult that they hesitate to bring forward schemes for introducing economies which were fully justified. He urged those gentlemen to have the courage of their opinions, because when an industry is suffering from uneconomic production owing to low prices ruling, then is the time when expenditure on extensions and improvements is more fully justified. The economies that could be introduced if they were carefully studied will fully justify the expenditure incurred.

Plants still actuated by low-pressure steam, possibly some distance from the boiler supply, cannot possibly compete with plants electrically driven. That difficulty was more serious some years ago, when there were still so many steel works without efficient and sufficient supplies of electric power; but that has been remedied to a great extent and the great economy which has resulted from electric driving supplanting engine driving, with regard to machine shops and shipyards, is applicable also in the case of various mills in steel works where the mill as such may be reasonably efficient and yet is an extravagant piece of mechanism because of its source of driving power.

Author's Closure

Thomas W. Hand, in reply said that certain electrical features in the combined hand and foot control of a large reversing motor have been introduced into America since he was there and, from reports, he believed it to be quite satisfactory. Judging from experience in learning to drive a motor-car, he did not see any great difficulty in working largely on foot control. As to the output of the mill at the Carnegie Works, the 16 kwhr. refers to slabs and not finished plates. At 75 per cent practice that would be about 20 to 22 kwhr. and that was with a record output of about 28,000 tons of slabs per month. The 44-in. blooming mill is an American rating and refers to pinion size; the size of the rolls is about 40 in.

Most of the new plants have not been designed or built abroad, with the exception of the Morgan type of mill, designed abroad, but built in Great Britain, and apart from one or two universal mills, the purchasers of which did not seem to have confidence in British engineers.

Referring to the shearing table, in connection with turning the plates around, that is a matter of judgment. In the later plants, particularly Colville's and the Clyde Bridge Works, two tables are used serving right and left hand shears and the plates are not turned around at all.

Mill for Wide Strip Steel

Mr. Toy questioned the use of the universal mill; the speaker thought it a little belated in its arrival. A mill has come into commission in Scotland for rolling wide type strip and it is expected that the usable product realized will be about 90 per cent of the steel fed into the mill, as compared with about 75 per cent when working with sheared plate. That is a matter worth considering.

He thought the point Sir William Ellis touched upon, of the present being the time for converting some of the admittedly obsolete plants, a matter deserving of everybody's serious attention. There are plants in the country ably and economically operated at present, but the time will come when they will have to be scrapped, and all the time the iron and steel industry is receding. There are a large number of billet mills being started in France. A wire mill of the latest type has just come in, a strip mill is to start shortly and after that a merchant mill. Belgium is putting down one of the finest combinations of rod, strip and merchant mills that can be designed. In purchasing that mill the people responsible for its selection did not go to the cheapest market; they could have bought a mill of this type in Germany possibly at half the price, but they went for the best mill that could be selected for the purpose in view. If the Continental nations, France, Belgium and Spain, could do that sort of thing—and America had done it for years—how was it that Great Britain, the home of the iron and steel industry, had to be content to work plants laid down 50 years ago?

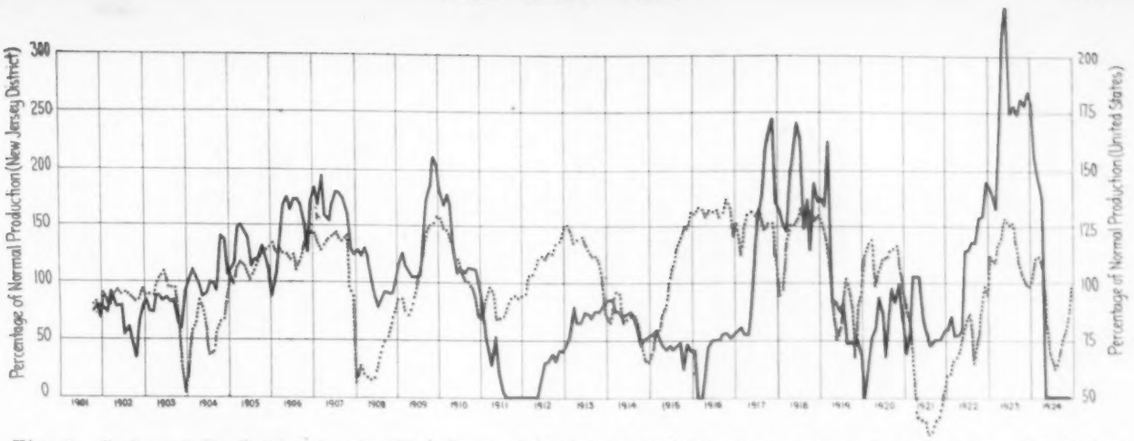

Fig. 6—Cycles of Production in the New Jersey District (full line) Compared with Cycles for the United States (dotted). The scales differ, to bring the curves within the same range

Pig Iron Trend on Eastern Seaboard

(*Continued from page 212*)

operating on the industry generally. The 1911 depression, which appears clearly in the curves for the other districts, and for the country as a whole, was not felt in the Lehigh district, but the effects of the expansion of plant had worn off by the middle of 1913; and the district, like the entire industry, was depressed in 1914.

The output of the newly constructed blast furnaces, plus the stacks which were obsolete but not yet abandoned, (and which could be brought into operation as pig iron prices rose) accounts for the high levels reached by the curve for the Lehigh district during the war. For over three years the adjusted index held close to the 150 mark, and was hardly affected even by the railroad congestion and fuel shortage of the winter of 1917 to 1918, which resulted in the sharp curtailment of output in the other Seaboard districts. Since the war, the Lehigh index seems to have fluctuated on a lower level, as though many furnaces had been worn out in the supreme effort of the war years and had been abandoned once for all. Neither in 1920 nor in 1923 was there a marked expansion in the district, and in 1923 the curve for the Lehigh district was well below that for the country as a whole, whereas, during the war years, it had been well above. On the whole, the evidence of Charts 1 and 5 indicates that the iron industry of the Lehigh district has been recently in a transitional stage.

These conclusions are supported by THE IRON AGE statistics for blast furnaces in the Lehigh district. On July 1, 1903, there were 28 furnaces in the district, of which 24 were in blast; on Aug. 1, 1918, there were 21 furnaces in the district, of which 16 were in blast. The total figure for July 1, 1923, was 18 furnaces, of which 10 were in blast; while for Jan. 1, 1925, a total on 14 furnaces was shown, of which 7 were in blast. Peak production was attained in August, 1918.

The outstanding features of the New Jersey and Susquehanna curves (Charts 2, 3, 6 and 7) are three: (1) the wide amplitude of the cyclical swings, up and down from depression to prosperity and back to depression; (2) the tendency for the districts to lag behind the industry as a whole in the early stages of the recovery phase of the cycle; and (3) the tendency at the peak to drop sharply while the entire industry is continuing to expand or remaining practically stationary on a high level.* These conditions are all related to the general economic forces indicated in the discussion of the downward secular trend of these districts. The New Jersey and Susquehanna district curves tend to swing with much greater amplitude than that for the country as a whole. In recent years, indeed, production in New Jersey has been stopped entirely in periods of low prices.

Of the Susquehanna and New Jersey industry it may fairly be said that it is always either "prince or pauper." In the economist's phrase, the furnaces in these districts are, for the most part, "marginal." This is but another way of saying that they can produce at a profit only when the price of pig iron is high, or when the business judgment of the manager leads him to believe that the price soon will be high. Pig iron prices, it will be recalled, normally do not advance in a period of recovery until production has begun to climb. On the other hand, when iron prices begin to

*The exceptional delay of New Jersey production to respond to the stimulus of rising prices for iron during 1916 was due to the unusual position of the Wharton Steel Co., which owned blast furnaces and iron mines, but lacked an actual management. This company was the property of the Joseph Wharton estate and the plant was kept idle pending completion of negotiations for its sale. Several negotiations fell through during 1915 and 1916, without effecting a transfer of title; not until late in December, 1916, did J. L. Replogle and his associates exercise their option of buying the property. The three furnaces at Dover, N. J., had been idle for several years, but prompt steps were taken to repair and reline them. The first furnace was blown in on April 7, 1917, and the others were in operation by mid-summer. The result of the vigor of the new management is shown by the sharp increase of production in New Jersey from 6900 tons in April to 21,300 tons in August and 27,000 tons in the high month, June, 1918.

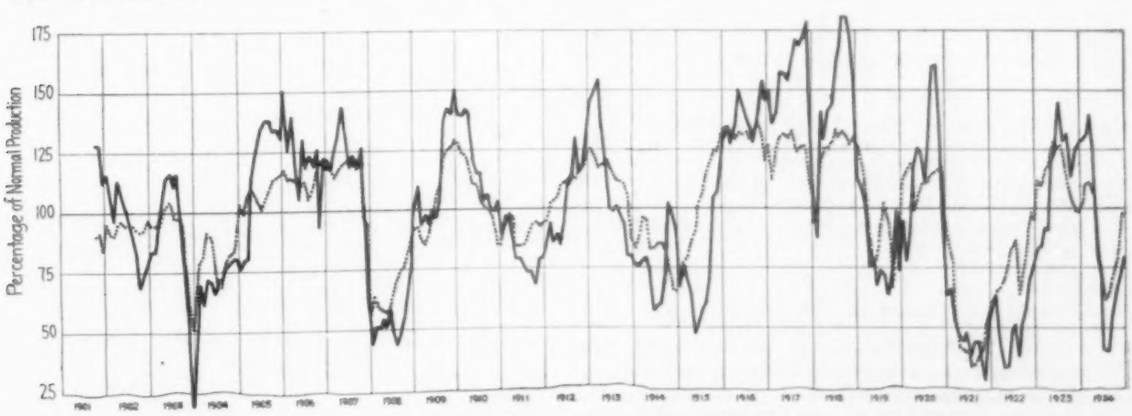

Fig. 7—Cycles of Production in the Lower Susquehanna and Lebanon Valleys (full line) Compared with Cycles for the United States (dotted)

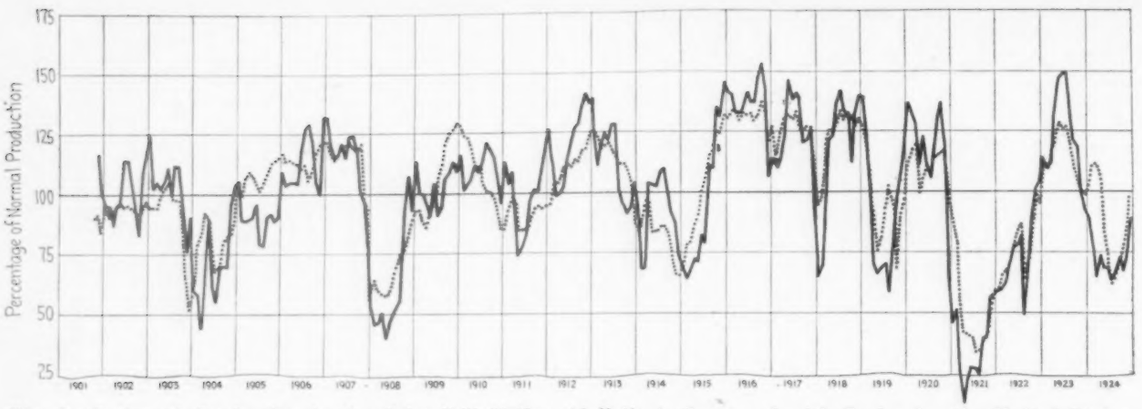

Fig. 8—Cycles of Production in the Schuylkill Valley (full line) Compared with Cycles for the United States (dotted)

decline, or tend to stabilize while general prices and wages are advancing, the manager of high-cost furnaces finds his margin of profit tending to narrow, and is led therefore to curtail promptly.

The index for the Schuylkill district presents a more normal picture (Charts 4 and 8). It moves in close sympathy with that for the United States, and the average amplitude of the cyclical swings is similar. In periods of prosperity there is a tendency for the Schuylkill index to rise above that of the whole country; in periods of depression, to fall slightly below; but the general story told by the two curves is substantially similar. There are some minor discrepancies, of course, as in 1910, 1914, and again in 1924. During the fall of 1910 the district output continued to expand when United States production was dropping off, and early in 1914 output had increased, in anticipation of the business improvement which was halted by the outbreak of war. In 1924 the district did not experience the rather sharp expansion at the turn of the year (which was substantial in the case of the Lehigh, Susquehanna and New Jersey districts), but continued to drop sharply, while output for the entire country was still approximately normal. This decline was checked, however, at levels well above those reached by the other Seaboard districts during the summer months. In the fall, the district shared in the general recovery.

Oil Field Equipment Maker Organized

The Foster-Hoefer Corporation, 419-20 Wright Building, Tulsa, Okla., has organized the Blackgold Machine & Mfg. Co. with $100,000 capital stock as manufacturing subsidiary, making oil field equipment which includes long stroke pumps, split bushings and storage tanks. The parent company has become known as the originator of long stroke pumping equipment.

The new company is anxious for quick contact with machinery supply houses from which it can obtain the following equipment within the next 60 days: lathes, 16-in. and up; radial drills, shapers, milling machines, planers, presses, turret lathes, grinding machines and other small tools, both machine and hand; also hack saws, emery wheels and polishers. It will be in the market for materials as soon as construction of its plant has been completed. Blackgold storage tanks are one of the company's special products and it will receive estimates from large sheet steel manufacturers who are now pressing other storage tanks.

The following are officers of the company: Perry A. Hoefer, president; R. E. D. Foster, vice-president and general manager; J. M. Loyd, secretary; Josephine Zackie, assistant secretary and treasurer. The board of directors include these and M. J. Rubel.

Plates of Record Size Rolled

The Lukens Steel Co., Coatesville, Pa., has rolled on its large mill 18 steel plates 1 in. thick x 196 in. wide and 284 in. long. So far as known these are the largest plates ever rolled, not only in the United States, but in the world.

Buys Dempsey Furnace Co.

The W. N. Best Corporation, 11 Broadway, New York, pioneer manufacturer of oil burners and oil burning furnaces, announces the purchase of the Dempsey Furnace Co., Jersey City, N. J. The combined furnace business of the two companies will be operated as the Dempsey Furnace Division of the W. N. Best Corporation, and will be carried on under the direction of H. B. Dempsey, who has had 20 years of practical experience in the design and manufacture of industrial furnaces for heat treating, carbonizing, forging, galvanizing, smelting, etc.

Calculating Cupola Mixtures

(*Concluded from page* 207)

taken from pig irons I, II and III? The analysis of these irons is shown in the table.

Kind of iron	Si, Per Cent	Mn, Per Cent	To Take to the Charge
	$A = 0.7$	$B = 0.22$	$P =$
Scrap	$\Delta A = 0.7$	$\Delta B = 0.07$	25 per cent
I	$a_1 = 0.8$	$b_1 = 0.2$	
White charcoal iron	$\Delta a_1 = 0.8$	$\Delta b_1 = 0.05$	x
II	$a_2 = 0.9$	$b_2 = 0.3$	
Gray pig iron	$\Delta a_2 = 0.9$	$\Delta b_2 = 0.15$	y
III			
Wrought iron	$a_3 = 0$	$b_3 = 0.15$	z

Fig. 12 shows the solution of the example; we must take 42 per cent from the iron I, 21 per cent from II and 75 — 42 — 21 = 12 per cent from III, to obtain the desired casting quality.

Accounting for Loss in Melting

About 8 per cent of the silicon and 10 per cent of the manganese are burnt out in the cupola*. This circumstance could be allowed for thus: Instead of A = 0.7 per cent, take the higher ratio of $A' = \frac{0.07}{1 - 0.08}$ 0.76 per cent and instead of $B = 0.22$ per cent that of $B' = \frac{0.22}{1 - 0.10} = 0.244$ per cent. We obtain thus a practically sufficient exactness, particularly with a small quantity of scrap.

*In solving this same problem in his book "Malleable Castings and Hearth Refining," E. Leber takes into consideration the burning out of these constituents.

Machinery Markets and News of the Works

MOBILE & OHIO BUYS

Large Machine Tool List Closed at St. Louis by Railroad

A Fair Amount of Buying by the Automobile Industry—General Business Fair for Mid-Summer

THE Mobile & Ohio, a subsidiary of the Southern Railway, has placed orders through its purchasing department at St. Louis for a large list of machine tools and cranes. Purchases will probably total between $100,000 and $200,000. Other railroad buying is of small proportions. The Santa Fe has placed a few additional orders and will probably buy the remainder of its list this week. The Burlington may not take further action on its requirements for a fortnight.

In the automobile industry one of the principal purchases was by the Oakland Motor Car Co., Pontiac, Mich., which bought a round lot of machines. The White Motor Co., Cleveland, bought four multiple spindle drilling machines and two or three other machines.

Industrial buying has been affected somewhat by the vacation period, but some sellers report a fair business for July. The A. O. Smith Corporation, Milwaukee, contemplates the purchase of additional equipment.

The Chicago Board of Education is expected to authorize the purchase of a machine tool list at a meeting to be held this week.

New York

NEW YORK, July 21.

BUYING of machine tools is possibly slightly less in volume than last month's business, but some sellers report that present indications are that July will not fall far below June. The International Motor Co., Plainfield, N. J., is placing a number of orders. Eight or 10 engine lathes will be among its purchases. Equipment is being bought principally for a new body plant on Long Island. The Interborough Rapid Transit Co., New York, has been in the market for a few tools. There have been no orders of importance from steam railroads.

Cassidy & Co., Inc., 15 Wilbur Avenue, Long Island City, manufacturer of lighting fixtures, etc., has awarded a general contract to the Wilcox Construction Co., 1 Bridge Plaza, for its two-story plant, 100 x 146 ft., at Foster Avenue and Buckley Street, to cost approximately $100,000 with equipment.

The New York Transfer Co., 263 Fifth Avenue, New York, will soon ask bids on a general contract for a four-story automobile service, repair and garage building, 100 x 150 ft., to cost about $550,000 with equipment. Dennison & Hirons, 288 Lexington Avenue, are architects.

The Trussell Mfg. Co., Poughkeepsie, N. Y., manufacturer of loose-leaf paper specialties, has acquired the local plant of E. I. du Pont de Nemours & Co., Wilmington, Del., heretofore occupied by its subsidiary, the de Pont Viscoloid Co. This latter organization is removing its equipment and business to Leominster, Mass., where a factory recently was acquired, and will concentrate and expand production at this location. The Trussell company will take title to the Poughkeepsie property in a few months, and will remove its present plant to this location, with facilities for increased manufacture.

The Long Island Lighting Co., 50 Church Street, New York, is disposing of a bond issue of $3,500,000, a portion of the fund to be used for extensions and improvements in its properties on Long Island, and for the purchase of a controlling interest in the Kings County Lighting Co.; E. L. Phillips is president.

The Keystone Equipment Co., 1947 Broadway, New York, has inquiries out for several locomotive cranes, a number of boilers, watertube, locomotive and horizontal return tubular; and a quantity of steel or wrought iron pipe, carload lots or less of 12, 14, 15, 16 and 20-in diameter.

The Standard Solophone Mfg. Co., New York, manufacturer of toys and novelties, has leased additional space in the building now occupied at 20 East Seventeenth Street, for expansion.

The Highland Motor Co., Glen Cove, N. Y., local representative for the Packard automobile, is taking bids on general contract for a two-story automobile service, repair and garage building, 50 x 95 ft., to cost approximately $50,000 with equipment. M. W. Housman, 172 Jamaica Avenue, Jamaica, N. Y., is architect. M. Seaman is president.

The American Tobacco Co., 111 Fifth Avenue, New York, plans the construction of a power plant at its proposed cigarette factory at Richmond, Va., reported to cost $500,000 with equipment.

Frank S. Nute, 156 East Forty-second Street, New York, architect, has completed plans for a three-story automobile service, repair and garage building, 48 x 100 ft., to cost $100,000 with equipment.

The Shipley Construction & Supply Co., Forty-second Street and Second Avenue, Brooklyn, manufacturer of ice and refrigerating machinery, has plans for an addition to cost in excess of $80,000 with equipment, for which foundations will soon be laid.

The Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., has work under way on a new unit, to replace a portion of the plant destroyed by fire a few months ago, reported to cost in excess of $100,000 with equipment. Contract was recently let to the Austin Co., 120 Broadway, New York.

The New Jersey Power & Light Co., Dover, N. J., has taken over the Blairstown Electric Co., Blairstown, N. J., with hydroelectric power station, and plans extensions and betterments, including the installation of additional equipment.

A one-story power plant, 50 x 92 ft., will be constructed at the proposed mill of the Lyons Piece Dye Works, Fifth Avenue, Paterson, N. J., in the Lincoln Gardens district, New Brunswick, N. J., estimated to cost $100,000. A general contract for the complete plant has been let to the Austin Co., 120 Broadway, New York.

The Jersey Central Power & Light Co., Morristown, N. J., has secured permission to issue stock in amount of $350,000, the proceeds to be used for expansion and improvements.

The Common Council, Pitman, N. J., is considering the installation of pumping equipment, in connection with proposed extensions in the municipal waterworks, for which an appropriation of $35,000, has been approved.

The J. S. Mundy Hoisting Engine Co., 696 Frelinghuysen Avenue, Newark, N. J., has completed plans for a two-story addition, 40 x 140 ft., with first floor to be equipped as a machine shop and portion of the second floor as a pattern shop. It will be ready for service in October.

The De Cozen Motor Co., 1228-38 Broad Street, Newark, will soon ask bids for a two-story top addition to its service, repair and headquarters building, 75 x 204 ft., estimated to cost $62,000. Frank Grad, 1023 Broad Street, is architect.

Leiman Brothers, 175 Christie Street, Newark, machinery, have inquiries out for a 28-in. vertical boring mill, Bullard New Era type.

The Safety Car Heating & Lighting Co., New Haven, Conn., has disposed of its former plant at Erie Avenue and Eleventh Street, Jersey City, N. J., to the Erie Land & Improvement Co., comprising four factory buildings on site, 160 x 300 ft., for $400,000, and will concentrate production at the New Haven works.

The Automatic Vending Machine Corporation, 120 Broadway, New York, recently incorporated, is completing models of automatic vending machines. The scope of operations has not yet been fully determined, but it is expected that products will be manufactured on contract. H. B. Walmsley is president.

The Automatic Word Counter, Inc., care of H. L. Warner, 85 Clinton Street, Brooklyn, N. Y., has been organized with capital stock of $100,000 to manufacture an attachment for typewriters. It is planned to have manufacturing done.

The Connewey Electric Laboratories, 309 Fifth Avenue, New York, has leased premises at 406 Jefferson Street, Hoboken, N. J., and has built a plant to manufacture radio tubes and similar products. Although installation is practically complete, the company is interested in any new developments in high vacuum pumps, filaments, etc.

The Multi-Counter Machine Co., 889 Broad Street, Newark, N. J., has been incorporated with $50,000 capital stock to manufacture special counting machinery and parts. Arrangements have been made for manufacturing by contract through the Furnell Mfg. Corporation, Newark. F. W. Dusenbury is president.

Ground was broken July 14 at 722 Frelinghuysen Avenue, Newark, N. J., for the new factory of the J. S. Mundy Hoisting Engine Co. It will be two-stories, 40 x 140 ft., of reinforced concrete brick and steel. The second floor will be occupied by the engineering, advertising, cost departments and pattern shop. The ground floor will be used for machine shop, which will be equipped with the most improved type of rapid production machine tools. It is expected to be ready for occupancy about Oct. 1. Clinton L. Mundy, president and general manager, estimates that the additional 11,000 sq. ft. in the new shop will increase production by 30 per cent.

The Practical Perfection Engineering Co., has been organized to manufacture internal combustion engines and gasoline turbines. Plans have not been definitely shaped, but the company intends to erect a building and will then be in the market for machinery. Address George W. Poillon, 37 Church Street, Tarrytown, N. Y.

The Champion Locknut Corporation, 30 Church Street, New York, recently incorporated, will manufacture lock nuts in all sizes and threads. Work is being done by contract. James H. Shekleton is president.

The Mutual Electric & Hardware Mfg. Co., 28 Verandah Place, Brooklyn, N. Y., is inquiring for a 36-in. gang slitter for No. 12 steel; also an automatic spot electric welder.

Philadelphia

PHILADELPHIA, July 20.

CONTRACT has been let by the Budd Wheel Corporation, Hunting Park Avenue, Philadelphia, manufacturer of steel automobile wheels, to the Wark Co., 1600 Walnut Street, for a one-story addition.

The Philadelphia Grain Elevator Co., Pier B, Port Richmond, Philadelphia, a subsidiary of the Reading Railroad Co., is arranging for an increase in its bonded indebtedness to about $3,000,000, the entire sum to be used for the construction of its proposed new grain elevator at Port Richmond, on which work will start in October.

Contract has been awarded to the Turner Construction Co., 1713 Sansom Street, Philadelphia, by Sears, Roebuck & Co., Philadelphia, for a one-story power house at its local distributing plant, reported to cost $35,000 with equipment. Headquarters of the company are at Chicago.

The General Electric Co., Witherspoon Building, Philadelphia, has plans for a six-story and basement addition to its plant at Sixty-ninth Street and Elmwood Avenue, to cost $250,000 with equipment. Harris & Richards, Drexel Building, are architects.

Chester W. Rudiall, Philadelphia, and associates have awarded a general contract to the Nelson Pedley Construction Co., 1510 Chestnut Street, for a new automobile service, repair and garage building to cost $100,000 with equipment.

The C. V. Hill Co., Inc., 360 Pennington Avenue, Trenton, manufacturer of refrigerators and refrigerating equipment, has work under way on an addition, 48 x 150 ft., estimated to cost $45,000. C. V. Hill heads the company.

The Ajax Rubber Co., Wall Street, Trenton, N. J., manufacturer of automobile tires, is reported to be considering the removal of a considerable portion of its local plant to its mill at Racine, Wis., where increased facilities will be arranged.

The Crown Paper Co., care of J. S. Fuller, 5438 Locust Street, Philadelphia, architect, has plans for new works at Lansdale, Pa., consisting of two one-story mills, 75 x 150 ft. and 30 x 120 ft. respectively.

The Central Railroad of New Jersey, 143 Liberty Street, New York, will begin work on its proposed locomotive and car repair shops at Bethlehem, Pa., to cost close to $1,000,000 with equipment. Richards & Gaston, Somerville, N. J., are general contractors.

Fire, July 14, destroyed the plant of the Carlisle Paper Box Co., Carlisle, Pa., with loss estimated at $75,000 including equipment. Pending decision for rebuilding, the company plans to lease a local building and install machinery to minimize interruption in manufacture. W. I. Tay heads the company.

H. B. Mehring & Co., 239 North George Street, York, Pa., has inquiries out for a small milling machine, bench type, suitable for making slots in metal window sash.

Thomas J. McNabb, Allentown, Pa., heretofore superintendent at the plant of the Charleroi Iron Works, Charleroi, Pa., will establish a machine shop and automobile repair works in a building at 235 North Madison Street.

The Taylor School District, Taylor, Pa., plans the installation of manual training equipment in its proposed two-story and basement high school, estimated to cost $200,000, for which foundations will soon be laid. John J. Howley, Traders' Bank Building, Scranton, Pa., is architect.

The Steam Vehicle Corporation, Newton, Mass., manufacturer of the Stanley steam-driven automobile, is said to be closing negotiations for leasing about one-third of the plant of the Bethlehem Motors Corporation, Allentown, Pa. The leasing company recently disposed of its Newton plant, and will arrange for considerable increased output at the proposed new works. Equipment will be removed from the former factory to the new location and considerable additional machinery installed. The Bethlehem company, manufacturer of motor trucks, will continue production on the present basis and will not make any change in operations. J. E. Gramlich is general manager of the Steam Vehicle Corporation and J. W. McDonald, superintendent.

The Penn Seaboard Steel Corporation, Franklin Bank Building, Philadelphia, is inquiring for four 800 to 1000 hp. used motors for rolling mill service, all variable speed. The speeds required are 80 to 100 r.p.m., 110 to 220 r.p.m., 150 to 300 r.p.m. and 275 to 550 r.p.m. respectively.

The Performo-Toy Co., Middletown, Pa., has been organized to manufacture action toys and is in the market for wood-working machinery and electric motors.

The Waco Wire Co., 3605 North Smedley Street, Philadelphia, organized with $35,000 capital, will manufacture solid and stranded bare copper wire, magnet wire, annunciator and radio wires and other special wires. Most of the equipment has been installed. John L. Alden is one of the principals.

Detroit

DETROIT, July 20.

PLANS are under way for a one-story addition to the factory of the Challenge Refrigerator Co., Grand Haven, Mich., to total about 25,000 sq. ft., estimated to cost approximately $30,000.

Fire, July 11, destroyed a portion of the plant of the McKinney Steel Co., Crystal Falls, Mich., including machine shop, forge and blacksmith shop, and power house, with loss estimated at $50,000. It is planned to rebuild.

The Hudson Motor Car Co., 12601 East Jefferson Street, Detroit, has awarded a general contract to the H. G. Christman Co., Stevens Building, for a one-story and basement addition, 100 x 340 ft. Albert Kahn, Inc., Marquette Building, Detroit, is architect.

The Buckeye Machine Co., Lima, Ohio, is said to have plans for the establishment of a branch factory at Detroit.

The Consolidated Paper Co., Monroe, Mich., has construction under way on a new one-story mill for the production of strawboard to cost $75,000. The installation will include beaters, digesters, forming machinery, etc.

The Packard Motor Car Co., 1580 East Grand Boulevard, Detroit, has awarded a general contract to the Everett Winters Co., Book Building, for a one-story addition, 85 x 150 ft., for which plans were drawn by Albert Kahn, Inc., Marquette Building, architect.

Fire, July 12, partially destroyed one of the buildings at the plant of the Briggs Mfg. Co., Harper Avenue, Detroit,

The Crane Market

THE market on overhead and locomotive cranes is quiet from the standpoint of inquiries, most of the current activity being in awards of business that has been pending for some time. Dwight P. Robinson & Co., 125 East Forty-sixth Street, New York, which has closed on the two hand power cranes for the Duquesne Light Co., is reported to be still in the market for a 100-ton overhead crane for the same company. The three 25-ton locomotive cranes for the Boston & Maine Railroad are expected to close soon. The list of cranes for the Mobile & Ohio closed this week with a Northwestern maker.

Among recent purchases are:

West Virginia Pulp & Paper Co., 201 Fifth Avenue, New York, two 15-ton monorail hoists from the Euclid Crane & Hoist Co.

Mobile & Ohio Railroad, a 180-ton, one 40-ton, two 15-ton overhead cranes and a 10-ton single leg gantry crane from a Northwestern maker.

Southern Pacific Railroad, four standard railroad ditchers from the American Hoist & Derrick Co.

U. G. I. Contracting Co., Philadelphia, a 35-ton locomotive crane for the Cornal Power Co., San Antonio, Tex., from the Ohio Locomotive Crane Co.

Philadelphia & Reading Railroad, a 4-motor ash pit crane with two 1½-cu. yd. buckets for Reading from an Eastern builder and a 35-ton, 60-ft. span gantry crane for Harrisburg, Pa., reported awarded to the same builder.

Newark Concrete Pipe Co., Newark, N. J., a 30-ton used Brownhoist locomotive crane for Kearny, N. J., plant from Philip T. King, New York.

Atlantic Refining Co., Philadelphia, a 12-ton electric locomotive crane, 8-ft. gage, from the American Hoist & Derrick Co.

Anaconda Copper Co., Butte, Mont., a 5-ton electric traveling crane from Manning, Maxwell & Moore, Shaw Electric Crane works.

City of Minneapolis, Minn., two 4-ton, 43-ft. 7¾-in. span, 4-motor, double trolley cranes for the Goder incinerator plant, through Page & Ludwick, from the Milwaukee Electric Crane & Mfg. Co.

Wanner Malleable Iron Co., Hammond, Ind., a 5-ton, 52-ft. span, 3-motor crane for Beloit, Wis., through Page & Ludwick, from the Milwaukee Electric Crane & Mfg. Co.

Chicago Vitreous Enamel Products Co., two 2-ton, 1-motor pillar cranes, with electric hoists, through Page & Ludwick, from H. D. Conkey Co.

Lehigh Valley Railroad, New York, a 35-ton gantry crane (the second in two weeks) reported placed with a Michigan maker.

manufacturer of automobile bodies, with loss reported at $15,000. It is planned to rebuild.

The Super Tool Co., Detroit, is said to be planning for extensions. It recently increased its capital to $50,000 and 250,000 shares of stock, no par value.

The Marysville Products Co., St. Clair, Mich., recently organized, will operate a plant for the manufacture of a portable folding talking machine.

DeFoe & Besecke, 1704 Baltimore Street, Detroit, architects, have plans for a one-story and basement automobile service, repair and garage building, 115 x 115 ft., to cost $70,000.

The Calumet & Hecla Mining Co., Calumet, Mich., is said to be considering the installation of four or more electric hoists at its Ahmeek and other shafts, with capacity for hoisting from a depth of 10,000 ft., maximum.

The Northern Furniture Co., Big Rapids, Mich., now being organized with a capital of $50,000 by local interests, has leased a building and will remodel for a new plant. About $25,000 will be expended for machinery. Andrew Bergelin, Big Rapids, is at the head of the project.

The Thompson Cabinet Co., Ludington, Mich., recently organized, has leased a building from the city and plans to begin operations soon for cabinet manufacture.

The National Products Co., Detroit, is in the market for three bending shapers in ¼- ⅜- and ½-in. sizes.

Cleveland

CLEVELAND, July 20.

MACHINE tool sales increased the past week as a result of activity on the part of the automotive industry. The Oakland Motor Car Co., Pontiac, Mich., purchased a round lot of machines of various types and has more to place. The White Motor Co., Cleveland, bought four multiple spindle drilling machines and two or three other tools. A local manufacturer of turret lathes booked a number of orders, none for over two machines. Another local manufacturer closed for six automatic screw machines and a number of single tool orders. Cleveland dealers report an increase in inquiries, but nearly all are for single machines. The demand for used machinery is fair and some new inquiries are for lots of from four to six machines.

The Transue & Williams Steel Forging Corporation, Alliance, Ohio, has absorbed the Weldless Rolled Ring Co., Cleveland, which has been manufacturing gear blanks and other circular forgings under a special process. S. V. Hunnings, who has been president of the Cleveland company, will be in charge of the new department of the Transue & Williams Corporation.

The city of Cleveland is having plans prepared for a $2,500,000 sewage disposal plant, construction of which is expected to start early in the fall. George B. Gascoigne, Leader News Building, is consulting engineer.

The Lamson & Sessions Co., 2188 Scranton Road, Cleveland, has placed contract for a two-story and basement addition, 25 x 50 ft. to its cooperage shop at Kent, Ohio.

The Board of Education of Toronto, Ohio, has taken bids for a high school in which a manual training department will be provided. Harry H. Campbell is clerk of the Board of Education.

Pittsburgh

PITTSBURGH, July 20.

MACHINE tool manufacturers are of the opinion that the prevailing dullness in the market will continue the remainder of the summer, but are hopeful that a good volume of business will develop early in September. It is understood that some good sized mill equipment orders are pending but it will probably be some time before they are placed. A fair amount of railroad buying is also looked for, but at present business placed in this district is extremely light.

Erection will begin on a new one-story foundry at the Linhart, Pa., works of the Westinghouse Electric & Mfg. Co., East Pittsburgh, to double approximately the capacity of the present foundry. The new structure will be given over to the production of brass and bronze castings and is estimated to cost $400,000 with equipment.

The Pittsburgh Parking Garages, Inc., Fourth and Bingham Streets, Pittsburgh, J. C. Dilworth, president, has awarded a general contract to the Mellon-Stuart Co., Oliver Building, for a three-story and basement service, repair and garage building, 120 x 148 ft., at Fifth Street and Sixth Avenue, to cost approximately $1,000,000 with equipment. Contract for a similar structure, six stories and basement, 90 x 180 ft., at Penn Avenue and Evans Way, to cost about $650,000, has been let by the same owner to the contractor noted. Robert O. Derrick, 120 Madison Street, Detroit, is architect for both buildings.

The School District of the city of New Castle, Pa., H. M. Marquis, secretary, is asking bids until Aug. 3 for equipment and supplies for manual training shops.

Fire, July 10, destroyed the tipple at Montour Mine No. 9, of the Pittsburgh Coal Co., McDonald, Pa., with loss estimated at $100,000 including machinery. Rebuilding plans are under advisement. Headquarters are in the Oliver Building, Pittsburgh.

J. A. Shaver, head of the Dunbar Supply Co., Dunbar, W. Va., and associates are planning the organization of a company to construct and operate an ice-manufacturing and cold storage plant to cost close to $45,000 with equipment.

J. G. Still, Pittsburgh, operating an automobile service, repair and garage building at 5621 Kirkwood Street, has tentative plans for an addition, to be used as a brazing and welding shop.

Manual training equipment will be installed in the two-story and basement high school to be erected at Ellwood City, Pa., estimated to cost $300,000, for which foundations will soon be laid. W. G. Eckles & Co., Lawrence Savings & Trust Building, New Castle, Pa., are architects.

The Northeast Lumber Co., Robson-Prichard Building, Huntington, W. Va., plans the construction of a new mill and power house on a tract of hardwood timber lands in Mingo County, recently acquired. A tramway system will be installed for timber conveying. The entire project is reported to cost in excess of $85,000. O. E. Burns is president.

The Duquesne Light Co., 435 Sixth Avenue, Pittsburgh, has plans for a one-story oil purification plant, 44 x 50 ft., to cost $25,000 with equipment. M. R. Scharff is company engineer.

Buffalo

BUFFALO, July 20.

GEORGE L. WAITT, 492 Kensington Avenue, Buffalo, manufacturer of metal devices for the molding of car wheels, etc., has plans for two one-story additions, 36 x 77 ft. and 56 x 72 ft.

The Fedders Mfg. Co., 57 Tonawanda Street, Buffalo, manufacturer of automobile radiators, etc., has filed plans for a one-story addition to its factory at 1543 Niagara Street.

The Wallace Brothers Co., Tonawanda Island, North Tonawanda, N. Y., is considering rebuilding the portion of its planing mill and wood-working plant destroyed by fire July 3 with loss reported at close to $50,000 including equipment.

The Northern New York Utilities, Inc., Watertown, N. Y., is disposing of a bond issue of $2,125,500, a portion of the proceeds to be used for extensions and improvements, including power plant construction on which preliminary work has started.

The City Council, Lackawanna, N. Y., is considering the installation of a pumping plant in connection with proposed extensions in the waterworks system.

Martin H. Jones, Buffalo, operating a machine shop and automobile repair works at 206 Forest Avenue, has plans for a one-story addition, 30 x 45 ft.

The Board of Education, Telephone Building, Buffalo, plans the installation of manual training equipment in the proposed high school to be erected in the Teutonia Park section, on which bids have been asked on general contract, estimated to cost $1,500,000.

The Rochester Gas & Electric Corporation, Rochester, N. Y., is arranging an increase in capital stock of $20,000,000, a considerable portion of the fund to be used for extensions in power plants and system.

The Chemical Toilet Corporation, Syracuse, N. Y., is in the market for a used power press, at least 48 in. between uprights.

The Burger Mfg. Co., Toronto, manufacturer of art metal goods, has leased a building in Buffalo and will begin manufacture of its products in the near future.

The Watson Mfg. Co., 63 Taylor Street, Jamestown, N. Y., has awarded a general contract to Mullen, Guinane & Ludwig, local, for a three-story brick addition, 45 x 80 ft. The company manufactures metal window screens and furniture.

A cylinder reboring machine, lathe, drill press and other equipment will be required by the Peterson-Ganey Motors, Inc., 736 East Second Street, Jamestown, N. Y., in connection with a proposed Dodge Brothers service station, 50 x 141 ft., to cost $50,000. Beck & Tinkham, 317 Washington Street, are architects.

The Schulze & VanStee Mfg. Co., Crescent and Scott Streets, Jamestown, N. Y., manufacturer of furniture, has awarded a general contract to P. Anton Peterson & Sons, local, for a three-story addition to cost $50,000. Woodworking, transmission, conveying and hoisting equipment will be required.

The Lewis Coal & Coke Co., Westfield, N. Y., recently organized with a capital of $50,000 by A. J. Lewis and associates, is in the market for transmission, conveying and hoisting equipment.

The City Council, Jamestown, N. Y., is arranging a bond issue of $125,000, the proceeds to be used for a sewage disposal plant, for which electrical pumps and other machinery will be required. H. Burdette, Cleveland, is sanitary engineer.

The Board of Education, Dunkirk, N. Y., will shortly take bids for $5,000 worth of tools for the vocational department of new high school nearing completion.

H. Russ & Sons, Sherman, N. Y., have work under way on a new garage and repair station, for which a cylinder reboring machine, small lathe and other equipment will be required.

New England

BOSTON, July 20.

ACTIVITY in the local machine tool trade centers in efforts to round up business from manufacturers who have gone through the formality of asking for quotations. Some prospects are anxious for certain machines, but appropriations for this equipment are still held up. The year 1921 heretofore was considered by the machine tool trade as possibly one of the dullest on record. Beginning with the latter part of April, this year, business has been fully as quiet as in that period. The city of Boston has placed formal orders for machine tools and sheet metal-working equipment with the Lynd-Farquhar Co. and other Boston dealers, but the total expenditure is not large.

Small tools, if anything, are a shade more active, but July will be a lean month even in this branch of business. There is, however, a fairly good demand for machine parts which is a reflection, according to some machine tool dealers, of recent purchases at auction sales of metal-working equipment.

The Wright Machine Co., Worcester, Mass., is about to start the erection of a foundry, 50 x 95 ft., one story, which will be devoted to the manufacture of high grade brass castings that enter into the product of the American Steam Gauge & Valve Mfg. Co., which is moving its factory from Camden Street, Boston, where it has been located for many years, to the Wright plant on Grand Street Court, Worcester. The American Steam Gauge & Valve Mfg. Co. and the Wright Machine Co. are controlled by the Schaeffer-Budenberg Co., Brooklyn. The Wright company manufactures the screw machine parts which enter into the products of the Boston firm. With the foundry in operation, the American company will thus have its manufacturing concentrated in one plant.

The P. & R. Co. has been organized at Worcester, Mass., with shop at 100 Lamartine Street, and is manufacturing dies, those for die casting being the chief specialty. The officers are: President and treasurer, Levi N. Plant; superintendent, Neil H. Roslund; general manager, Nathan Lester, formerly with the Atlas Die Casting Co., also of Worcester.

Plans are ready for figuring on a one-story, 300 x 1150 ft. assembly building for the Ford Motor Co. on Middlesex Avenue, Somerville, Mass. Albert Kahn, 1000 Marquette Building, Detroit, is the architect.

The J. L. Thompson Mfg. Co., Waltham, Mass., has awarded contract for an addition to its machine shop. Arthur F. Gray, 509 Exchange Building, State Street, Boston, is the architect.

Construction will start immediately on a two-story, 50 x 200 ft. japanning department and warehouse by the Noiseless-Remington Typewriter Co., Middletown, Conn. The James Stewart Co., New York, has the contract.

The Noble Mfg. Co., 89 Woodbine Street, Hartford, Conn., has been organized to manufacture mechanical toy models of construction equipment. Operations have been started and additional lines will be taken up later.

The Paco Wire Mfg. Co., 95 Broad Street, Providence, R. I., has been organized to manufacture wire. Operations are conducted under contract for the present but the company contemplates the equipment later of its own plant. H. M. Davis is one of the heads.

The Atlas Automotive Parts Co., Ash and Mt. Grove Streets, Bridgeport, Conn., incorporated with $50,000 capital stock, has leased a new building and started production on drop hammers, power presses, drill presses, grinders, automatic and hand screw machines, etc., also complete annealing and hardening equipment. David Blumberg is president; Benjamin Glass, vice-president, and Harry Madwed, secretary-treasurer.

Tentative plans are being considered by the Savage

Paper Co., Skowhegan, Me., for rebuilding the portion of its mill destroyed by fire July 14, with loss estimated at $150,000 including equipment.

The North Terminal Corporation, Boston, has taken out a permit to construct a multi-story automobile service, repair and garage building at 600 Commercial Street, to cost approximately $400,000 with equipment.

The Wallace Barnes Co., Main and South Streets, Bristol, Conn., manufacturer of spring steel, has awarded a general contract to the Torrington Building Co., Torrington, Conn., for a one-story addition to cost $15,000.

G. N. Jacobs, 4 Park Street, Boston, architect, has plans for a two-story automobile service, repair and garage building, 100 x 300 ft., estimated to cost $200,000 with equipment.

Work has begun on a five-story addition, 85 x 85 ft., at the plant of the Cambridge Rubber Co., 748 Main Street, Cambridge, Mass., to cost in excess of $85,000 with equipment. J. R. Worcester & Co., 79 Milk Street, Boston, are engineers.

Rubwood Wheel, Inc., Monson, Mass., manufacturer of rubber products for the automotive industry, has construction in progress on a new building. Extensions are also under way at the powerhouse.

Following the acquisition of the Yellow Cab Mfg. Co., Chicago, by the General Motors Corporation, Detroit, to be merged with the truck division of the last noted organization, plans are under way to convert a portion of the plant of the New Departure Mfg. Co., Bristol, Conn., a division of the purchasing company, for the manufacture of taxicab parts and equipment.

The Hopedale Mfg. Co., Milford, Mass., manufacturer of automatic cotton looms and other textile mill equipment, has acquired patent rights for the production of worsted and woolen looms heretofore made by J. J. McCloskey, Collingswood, N. J., as well as rights for the manufacture of the silk looms previously made by the Mason Machine Works, Taunton, Mass. The Hopedale company will expand its plant to accommodate the increased manufacture.

The J. L. Thomson Co., Waltham, Mass., manufacturer of machinery and parts, has awarded a general contract to L. H. Shattuck, Inc., Manchester, N. H., for a three-story and basement machine shop addition, 50 x 100 ft. Arthur F. Gray, Exchange Building, Boston, is architect and engineer.

The Worcester Pressed Steel Co., 31 Randolph Road, Worcester, Mass., has taken out a permit to build a one-story addition.

Officials of the Pejepscot Paper Co., Brunswick, Me., have formed a subsidiary, known as the Androscoggin Water Power Corporation. It will take over all the power properties and sites heretofore held by the parent organization and is said to have plans under way for hydro-electric power development on the Androscoggin River, with substations, transmission lines, etc.

The E. M. Jennings Co., New Haven, Conn., automobile dealer, has awarded a general contract to the Larkin-Carey Co., 166 Brewery Street, for a one-story service, repair and garage building, 100 x 285 ft., to cost $75,000. Norton & Townsend, New Haven, are architects.

Bids are being taken by the Providence Gas Co., Providence, R. I., for a three-story service and repair works, 82 x 220 ft., including one-story adjoining service, repair and garage building, 96 x 296 ft., for company motor trucks and cars. Jenks & Ballou, Grosvenor Building, are architects and engineers.

St. Louis

ST. LOUIS, July 20.

PLANS are being considered by the Missouri-Pacific Railroad Co., Railway Exchange Building, St. Louis, for a new engine repair shop at El Dorado, Ark., to cost $50,000 with equipment. E. A. Hadley is chief engineer.

The H. N. Strait Mfg. Co., Adams Street and Shawnee Avenue, Kansas City, Kan., manufacturer of agricultural implements, plans the early rebuilding of the portion of its foundry destroyed by fire July 8, with loss estimated at $45,000 including equipment.

The Southwestern Light & Power Co., Lawton, Okla., is disposing of a preferred stock issue of $742,500, a portion of the proceeds to be used for extensions in power plants and system.

The Common Council, Willow Springs, Mo., plans the installation of pumping equipment in connection with extensions and improvements in the municipal waterworks. A bond issue will be arranged.

The Gasconade Power Co., Mexico, Mo., is planning to purchase the municipal electric light and power plant at Owensville, Mo., and will make extensions in this district and install additional equipment.

The Board of Education, Burlingame, Kan., is considering the installation of manual training equipment in its proposed two-story and basement high school estimated to cost $100,000, for which bids have been asked on a general contract. W. E. Glover, Stormont Building, Topeka, Kan., is architect.

The Blackgold Machine & Mfg. Co., Tulsa, Okla., has plans for a new factory for the manufacture of oil-well equipment, consisting of two one-story units, 50 x 150 ft. and 50 x 150 ft., estimated to cost $70,000, of which about $50,000 will be expended for machine tools and other equipment. R. E. D. Foster heads the company. J. M. Loyd, P. O. Box 824, is engineer.

The Atchison, Topeka & Santa Fe Railroad Co., Railway Exchange Building, Chicago, will proceed with the erection of a one-story engine house, with repair facilities, at Hutchison, Kan., estimated to cost $100,000 with equipment. A general contract has been let to the McKee Construction Co., El Paso, Tex.

Robert W. Watson, Telephone Building, Leavenworth, Kan., architect, has completed plans for a one-story and basement machine shop, 40 x 75 ft., at 419-23 South Fifth Street, to be equipped and occupied by A. T. Evans and associates.

The Board of Education, Charleston, Mo., plans the installation of manual training equipment in its proposed two-story and basement high school, estimated to cost $110,000, for which bids will be asked on a general contract before the close of the month. H. H. Hohneschild, 3 North Seventh Street, St. Louis, is architect.

The Common Council, Greensburg, Kan., will arrange for extensions and improvements in the municipal electric light and power plant, for which a bond issue of $50,000 has been approved. A. C. Reed is town clerk.

The Commercial Steel Works, newly organized, manufacturer of sheet metal products, has begun operations at 1110-1112 North Ninth Street, St. Louis. The president, Miss C. O. Joerder, was associated with the O. K. Harry Steel Co., St. Louis, for 20 years in the capacity of secretary. The company manufactures sheet steel products, such as tanks, barrels, portable garages, ash pits, coal chutes and special products.

The General Automotive Co., 1822 North Street, Lincoln, Neb., has been organized to manufacture as indicated and to act as distributor in general automotive lines. Products will be made under contract.

Cincinnati

CINCINNATI, July 20.

SALES have fallen off somewhat in the past week, but production of machine tools continues above normal for the mid-summer period. It is not anticipated that activities will reach the intensity evident last month until early fall. Purchases by the automotive industry have declined, while railroad buying here has been spasmodic. A few foreign orders are coming in, but are principally confined to special and automatic machines. Despite the noticeable let-down which has occurred in the past two weeks, executives are optimistic and of the opinion that buying will be heavy in the fall.

The largest single order placed locally calls for four vertical automatic chucking machines, valued at close to $30,000, for delivery to a manufacturer in the automotive field. Demand for planers is slightly better and more inquiries are being received by manufacturers in this district. The Liberty Machine Tool Co., Hamilton, Ohio, has booked an order for a 36-in. open side planer from the Weirton Steel Co., Weirton, W. Va. The same company has also sold a 36-in. double housing planer to a Detroit manufacturer. The Illinois Central Railroad bought a turret lathe from a local producer. Boring mill builders are busy on orders that have been placed in the last few weeks. The Cincinnati Planer Co. has disposed of an 8-ft. boring mill to the Bethlehem Steel Co. Lathe manufacturers state that business has been fair.

Orders are coming in for single machines from widely scattered parts of the country. A local builder received an order for an 18-in. lathe from a Pacific Coast company. Milling machine operations have slackened a bit, but are still quite active. The Sorocabana Railway, Brazil, purchased two 50-ton bushing presses. A manufacturer in Colombia, South America, has also closed for a 16-in.

lathe with a Cincinnati builder. The Chesapeake & Ohio Railroad bought a 600-lb. single frame steam hammer and the Ferracute Machine Co., Bridgetown, N. J., is the purchaser of a 72-in. duplex control borer.

The D. A. Ebinger Sanitary Mfg. Co., Columbus, Ohio, has placed a general contract with E. Elford, 555 South Park Street, Columbus, for a $40,000 addition, two stories and basement, 50 x 219 ft. It will be used for a sheet metal department. D. A. Ebinger is president and treasurer.

The Capital Lift & Mfg. Co., Columbus, Ohio, has taken bids for a one-story addition, 81 x 60 ft., for the manufacture of small elevators and ornamental iron. J. C. Nailor is president.

The Miami Garage Co., Dayton, Ohio, is taking bids for a three and four-story service, repair and garage building, 120 x 200 ft., estimated to cost $200,000. Frank Hill Smith, Inc., 14 East Second Street, is architect.

The Illinois Central Railroad Co., Chicago, will soon begin the erection of its locomotive and car shops at Paducah, Ky., to cost close to $1,500,000 with equipment. Contract for a portion of the work has been let to Joseph E. Nelson & Sons, 3240 South Michigan Avenue, Chicago. A. F. Blaess is chief engineer.

F. A. Rosenblatt, Greenville, Tenn., and associates have acquired the plant of the National Seating Co., Morristown, Tenn., for the manufacture of school and office desks and kindred specialties. Equipment improvements are under consideration.

The Mills Equipment Corporation, Volunteer Life Building, Chattanooga, Tenn., has inquiries out for a steam shovel, crawler type, Erie manufacture, about ½-yd. bucket capacity; a number of dump cars, about 4-yd. capacity, 36-in. gage; one 5-in. centrifugal pump, Cameron type, and one double-drum, electric-operated hoisting engine.

The Safe Cabinet Co., Marietta, Ohio, manufacturer of safes, metal cabinets, etc., is reported to be in negotiation with the local Chamber of Commerce relative to the erection of new and enlarged works and the removal of its Cincinnati plant to this location, where operations will be concentrated. The project is estimted to involve $1,000,000. C. F. Strecker is chairman of the Chamber of Commerce Committee, in charge.

The Shartle Machine Co., 359 Dublin Avenue, Columbus, Ohio, has inquiries out for four or five watertube boilers, from 500 to 700 hp. each, with accessory equipment.

Chicago

CHICAGO, July 20.

MACHINE tool trade is considerably less active than in June and present dullness is attributed to the fact that the vacation season is now in full swing. Industrial buying is especially quiet. The Santa Fe continues to close for a few machines from time to time, with the possibility that the remainder of its list will be placed during the current week. The Burlington will probably not take any further action on its requirements for a fortnight. The placing of the St. Paul list has been deferred until after Aug. 1.

The Chicago Board of Education will convene on July 22, when it is hoped that it will authorize the placing of orders against its outstanding inquiries. The A. O. Smith Corporation, Milwaukee, contemplates the purchase of additional equipment. The Lindquist & Hanna Mfg. Co., Chicago, has closed for a used 48-in. open side planer. The Kearney & Trecker Corporation, Milwaukee, has placed orders for two turret lathes.

The Arrowhead Iron Works, 816 West Erie Street, Chicago, has leased the first floor of section 27, containing 7680 sq. ft., in the Morris Hair House, Union Stock Yards, from the North American Provision Co. for a term of years.

A. B. Dick & Co. are constructing a one-story plant addition, 125 x 165 ft., at 714-28 West Jackson Boulevard, Chicago, to cost $850,000. The building will be completed by Nov. 1.

The Maytag Co., Newton, Iowa, has awarded contract for a six-story addition to its machine shop.

The city of Windom, Minn., has awarded contract for an addition to its electric power plant.

The Northwestern Barb Wire Co., Sterling, Ill., has issued bonds for $350,000 to provide funds for the construction of a warehouse which will house 500 cars of fence and other manufactured products.

The City Council, Springfield, Ill., has awarded a general contract to J. Clyde Evans, Fifth and Capitol Avenues, for a one-story machine shop and automobile service and garage building, 100 x 130 ft., to cost about $27,000. M. S. Hanes, 205½ Sixth Street, is architect.

The Illinois Central Railroad Co., 135 East Eleventh Place, Chicago, will begin the construction of its proposed engine house, turntable and machine shops at Sioux City, Iowa, for which a general contract has been awarded to Grant Smith & Co., Pioneer Building, St. Paul, Minn. The work will cost about $85,000.

The Board of Education, Marshalltown, Iowa, plans the installation of manual training equipment in its proposed new high school estimated to cost $325,000. H. E. Reimer, 129 East Main Street, is architect.

The Oil-O-Matic Heating Co., 207 West Washington Street, Bloomington, Ill., manufacturer of oil-burning equipment, will soon take bids for a one-story plant, 140 x 400 ft., to cost $70,000. C. W. Williams is one of the heads of the company.

Manual training equipment will be installed in the two-story and basement high school to be erected at Rushville, Neb., estimated to cost $100,000, for which bids will soon be asked on a general contract. J. F. Reynolds & Co., U. B. Bank Building, Sioux City, Iowa, are architects.

The Waldorf Paper Products Co., Myrtle and Pillsbury Avenues, St. Paul, Minn., will soon begin construction of a one-story power house, 56 x 100 ft., to cost $100,000 with equipment. H. A. Sullwold, 107 East Third Street, is architect.

The Central States Electric Co., Iowa Falls, Iowa, will soon break ground for a proposed hydroelectric generating plant on the Iowa River, to cost $250,000.

The Huegel Nugent Petroleum Co., 1101 West Thirty-seventh Street, Chicago, has plans for a one-story oil compounding, storage and distributing works, 68 x 190 ft., to cost $65,000 with equipment. Robert T. Newberry, 160 North La Salle Street, is architect.

The Consumers Co., Dubuque, Iowa, will erect a one and two-story and basement ice-manufacturing plant, 80 x 130 ft., to cost $45,000. Herman Friedl, 508 North Dearborn Street, Chicago, is architect. H. H. Howie is one of the heads of the company in charge.

The Foley Saw-Tool Co., 1912-16 East Lake Street, Minneapolis, Minn., has plans for a new one and two-story factory, 50 x 150 ft., to cost about $30,000. H. B. Foley is president.

The Non-Pressure Store Front Co., Sioux City, Iowa, has been organized with $50,000 capital stock to manufacture an improved copper construction for setting plate glass store fronts. Operations will be conducted in Sioux City. E. C. Currier is president.

Milwaukee

MILWAUKEE, July 20.

JUDGING by the gradual broadening of inquiry, improvement in demand for machine tools is not far distant. Trade so far in July has lost some of the sluggishness of previous months through improved buying by railroads and automotive industries, while the farm machinery field likewise has furnished at least a little business. Automobile plants, as a rule, are doing less retooling for new models than usual between seasons. Employment in local foundries and machine shops is well maintained at a slightly gaining tendency since April, despite the usual variations due to the vacation season. There is no indication of the contraction in general industrial operations that occurred last year.

The International Harvester Co. of America, sales division, 217 Oregon Street, Milwaukee, closed bids July 22 on the construction of an addition, 80 x 120 x 46 ft., to its service station and repair shop at 85-95 Reed Street, estimated to cost $125,000 with equipment. W. L. Jens is branch manager.

The Milwaukee Department of Public Works opened bids July 15 for the construction of a municipal service building to cost about $300,000. Theodore Stark & Co., local, is low bidder on the general contract, and the Milwaukee Bridge Co., low on the structural steel, amounting to 820 tons. Contracts will be awarded this week. While much of the equipment will be derived from the various smaller shops now maintained, considerable new equipment of the heavy duty type will be installed, but details have

not yet been completed. Purchases probably will not be made until September. Roland E. Stoelting is commissioner of public works.

The Milwaukee Corrugating Co., Milwaukee, which is making extensive additions to its main plant at Thirty-sixth and Burnham Streets, will remodel and enlarge its steam generating plant and heating system, requiring important equipment purchases. Specifications are being prepared by Robert Cramer, consulting engineer, 1105 Vliet Street, local. Louis Kuehn is president and general manager.

The Milwaukee Branch, Mack International Motor Truck Corporation, 439 Prospect Avenue, contemplates the erection and equipment of a new sales and service building to cost about $150,000. Plans and estimates will be prepared at once. Rodney Hallam is manager.

The Lakeside Power Co., Milwaukee, subsidiary Milwaukee Electric Railway & Light Co., will start work immediately on an additional 30,000-kw. unit of its steam generating plant in St. Francis, suburb of Milwaukee, at a cost of $1,000,000. The present capacity is 130,000 kw. The plant uses powdered coal exclusively. John Anderson is chief engineer.

The Gridley Dairy Co., Eighth and Sycamore Streets, Milwaukee, will build a $125,000 warehouse, cold storage and distributing plant, two stories, 145 x 182 ft., at Wauwatosa, Wis., and has placed the general contract with the Dahlman Construction Co., 456 Broadway, Milwaukee. Purchases will be made later of refrigerating machinery, bottling appliances, conveyors, etc. Martin Van Antwerpen is vice-president.

The Marathon Battery Co., Wausau, Wis., manufacturer of storage batteries, radio and automotive supplies, has increased its capital stock from $100,000 to $180,000 to provide plant extensions and enlargement of the business.

The Superior Metal Products Co., 472 Charles Street, Kenosha, Wis., has been organized to manufacture automobile accessories and has secured a plant and installed part of the equipment. It will be in the market for raw materials.

The Day Mfg. Co., 610 Sycamore Street, Milwaukee, has been organized with 2500 shares of preferred stock, $100 par value and 3000 shares of no par common stock, to manufacture speed clamps. They will be made by contract for the present. A. J. Gillet is secretary-treasurer.

Gulf States

BIRMINGHAM, July 20.

PROPERTY is being acquired by the Yazoo & Mississippi Valley Railroad Co., Memphis, Tenn., at Natchez, Miss., for an engine house and locomotive repair shops, reported to cost $85,000 with equipment.

The Home Ice Co., Laredo, Tex., recently acquired by new interests, has been reorganized with a capital of $200,000. Plans are under way for enlargements and the installation of considerable additional equipment. A. J. Neff is vice-president and general manager; M. H. Morgan is secretary and treasurer.

G. J. McNamee, city clerk, Bartow, Fla., is taking bids until Aug. 12 for equipment for the municipal waterworks, including one 1000-kw. turbine-driven generating unit, two water-tube boilers and superheaters, two boiler feed pumps, one surface condenser and auxiliary equipment, two 1500-gal. per min. high head centrifugal pumping units, two 1000-gal. per min. low head centrifugal pumping units, switchboard apparatus, etc.; also, on alternate proposition, for two 600-hp. Diesel engine units, and two 400-kw. direct-connected generators and exciters. E. V. Camp and associates, Bartow, are consulting engineers.

The W. C. Pepper Fire Apparatus Co., Birmingham, manufacturer of fire-fighting equipment, is said to be considering the erection of a one-story branch plant for assembling and repair work at Gadsden, Ala.

The Shearman Concrete Products Co., Little Rock, Ark., has work under way on a new plant near Hudnall, Tex., for the manufacture of cast and other concrete products, to cost $150,000 with equipment. R. S. Lander, Little Rock, is secretary and treasurer.

The West Texas Utilities Co., Abilene, Tex., will proceed with an expansion program to cost in excess of $100,000, including enlargement in the local steam-operated electric power plant and installation of a 3700-kva. turbo-generator and accessory equipment, additions to the power substation at Roby, Tex., new substation and transmission line apparatus, etc.

The Cleveland Equipment Co., P. O. Box 525, Houston, Tex., has inquiries out for 20 or more 2-way steel dump cars, each 12-yd. capacity, standard gage.

M. S. Fisher, Canyon, Tex., and associates, have completed plans for a new factory for the manufacture of piston rings and kindred specialties.

The Amarillo Oil Refining Co., Amarillo, Tex., has plans under way for extensions and improvements in its local oil refinery. Additional equipment will be installed. A half-interest in the company has recently been acquired by Dorset Carter, operating the Pan-Tex Pipe Line Co. in this district.

The Texas Rail & Supply Co., 1917 Forest Avenue, Dallas, Tex., has inquiries out for a rail straightener.

The River Falls Power Co., River Falls, Ala., has preliminary plans for a new hydroelectric generating station on the Patsilaga River, near Gantt, Ala., with initial capacity of 7500 hp., to cost in excess of $150,000 with transmission system. The Southern Engineering Corporation, Albany, Ga., is engineer.

M. A. Marcus, Wichita Falls, Tex., operating a chain of ice-manufacturing and cold storage plants, has acquired property at Littlefield, Tex., for a new plant, primarily for ice-manufacture, estimated to cost $40,000 with equipment.

The Eufaula Mill & Fertilizer Co., Eufaula, Ala., recently acquired by new interests which operate the Bain Peanut Co., Norfolk, Va., has plans for enlargements in its fertilizer works and the installation of additional machinery estimated to cost $50,000. E. W. Vance is one of the officials in charge.

The Sebring Ice Co., Sebring, Fla., recently acquired by new interests, has plans for enlargements and the installation of additional equipment estimated to cost $35,000.

The City Council, Holly Hill, Fla., plans the installation of pumping equipment in connection with proposed extensions and improvements in the municipal waterworks estimated to cost $70,000.

The Trotti Motor Co., 517 Texas Street, El Paso, Tex., manufacturer of automobile equipment, plans the erection of an addition to double, approximately, the present capacity, estimated to cost $50,000 with machinery. L. J. Trotti is president.

The Texas Power & Light Co., Dallas, Tex., has acquired about five acres at Taylor, Tex., and will use a portion of the site for a one-story automatic power substation.

The Pitts Foundry Co., incorporated with $10,000 capitalization, Alton V. Pitts, Kent, Ohio, president and treasurer; G. Johnson, vice-president and superintendent; A. Wynn Jones, local attorney, secretary, has leased the Blakeslee plant of the American Casting Co., Birmingham, and will produce gray iron castings. Mr. Pitts was for several years with the Kent Machine Co. at Kent.

The S & T Mfg. Co., 315 Baronne Street, New Orleans, has been organized to manufacture brackets for holding fire hose. Work will be done through contract with stamping works. H. C. Tabler is president and manager.

The Elms Machinery Co., P. O. Box 1479, Dallas, Tex., has been incorporated to manufacture and deal in oil field machinery. C. C. Hayley is one of the principals.

The Walters Automatic Gas Cut-Off Co., 316-18 Fredericksburg Road, San Antonio, Tex., organized with $20,000 capital, will manufacture gas equipment and appliances, specializing in automatic gas cut-offs. Materials used include aluminum sheets, rod and tubular brass, seamless steel tubing, steel rods, tool steel, screws, nuts, etc. W. B. Walters is president.

The Service Radio Corporation, Hattiesburg, Miss., has been organized to manufacture radio equipment. It is in need of materials.

The Kansas City Structural Steel Co., Dallas, Tex., has been organized as engineer, manufacturer and contractor, specializing in field erection work. It is a subsidiary of the Kansas City Structural Steel Co., Kansas City, Kan. George H. Kinney is president.

Indiana

INDIANAPOLIS, July 20.

THE Northern Indiana Gas & Electric Co., Hammond, Ind., has filed plans for a one-story repair shop on Elm Street to cost approximately $37,000 with equipment.

The Leonard Range Co., Washington, Ind., is reported to be arranging for the early rebuilding of the portion of its plant recently destroyed by fire. It is estimated to cost $35,000. J. E. Leonard is president.

The Parker Rustproof Co., Indianapolis, organized to operate a metal-enameling works, particularly for automobile parts, has leased a one-story building at 820 North New Jersey Street. Elmer W. Davis is manager.

Bids are being asked by the Board of Public Works,

Gary, Ind., until July 27 for equipment for a sewage pumping plant estimated to cost $100,000. Alvord, Burdick & Hanson, 8 South Dearborn Street, Chicago, are engineers.

The receivers for the Revere Motor Car Co., Logansport, Ind., is said to be closing negotiations with a company at Chicago, name temporarily withheld, for the sale of the local plant, idle for more than two years, to be used for the manufacture of automobile equipment.

The M. P. Dahl Tool & Die Co., Indianapolis, is arranging for the early removal of its plant to a new building at Twelfth and Illinois Streets, where increased production facilities will be provided.

The Indiana Service Corporation, Traction Terminal, Fort Wayne, Ind., has awarded contract to the Indiana Bridge Co., Muncie, Ind., for a one-story traction car shop and storage building, 200 x 200 ft., estimated to cost $125,000 with equipment.

The Common Council, Bicknell, Ind., is considering the installation of pumping equipment in connection with proposed extensions in the municipal waterworks. John W. Moore, Indiana Pythian Building, Indianapolis, is engineer.

The Duo-Fold Co., Peru, Ind., has been organized to manufacture automotive equipment, specializing in a carbureter control. For the present the work will be done by contract.

South Atlantic States

BALTIMORE, July 20.

BIDS will be received by the Board of Awards, office of the city register, City Hall, Baltimore, until July 29 for equipment and supplies for the vocational schools for the Department of Education. John H. Roche is secretary of the board of school commissioners.

The Pioneer Hardwood Flooring Co., Ashland Avenue and Eighth Street, Baltimore, is taking bids on a general contract for a one-story plant, 120 x 245 ft., to replace its mill recently destroyed by fire, estimated to cost $60,000 with equipment. Frederick W. Steiner, 124 North Lakewood Avenue, is architect.

The Atlantic Coast Line Railway Co., Wilmington, N. C., is completing plans for an addition to its locomotive repair shops at Florence, S. C., estimated to cost $35,000.

The Mexican Petroleum Corporation, East Brooklyn, Curtis Bay, Baltimore, is considering the erection of an addition to its local refinery, comprising a complete operating unit, with 9 stills and accessory equipment, for the production of asphalt and other petroleum by-products, reported to cost $500,000 with equipment. Headquarters are at 120 Broadway, New York.

The Board of Crisp County Commissioners, Cordele, Ga., has engaged the Southern Engineering Corporation, Albany, Ga., to prepare plans for a proposed hydroelectric power development on the Flint River, near Warwick, Ga., estimated to cost $1,250,000 with transmission system.

The Roanoke Spoke & Handle Co., Roanoke, Va., has preliminary plans for rebuilding the portion of its factory in the Norwich district, destroyed by fire July 8 with loss of $150,000 including equipment.

Sterrett & Co., Inc., 1358 D Street, N. W., Washington, has awarded a general contract to the C. H. Tompkins Co., 1614 Park Road, N. W., for a two-story automobile service, repair and garage building, 80 x 110 ft., to cost $130,000 with equipment.

The Atlantic Wrecking Co., Phoenix Building, Baltimore, has inquiries out for an electric-operated double-drum hoist, with swinger and accessories, to operate a maximum load of 15 tons.

The Parham Co., Henderson, N. C., is in the market for two crude oil engines, each 40-hp. capacity, with accessories.

The Taylor-Colquitt Co., Easley, S. C., has acquired about 75 acres near Spartanburg, S. C., and plans the construction of a timber-treating and creosoting plant, including power house, to cost $200,000 with machinery.

The Common Council, Tallapoosa, Ga., plans the installation of pumping machinery in connection with extensions in the municipal waterworks. W. T. Patterson is superintendent of light and water departments.

The Griffin Foundry & Mfg. Co., Rome, Ga., is in the market for a mill for reclaiming scrap iron from cupola dumpings.

Fire, July 13, completely destroyed the plant of the Star Furniture Co., Lenoir, N. C., with loss estimated at $160,000 including equipment. Tentative plans are under consideration for rebuilding. R. C. Robbins is secretary and treasurer.

The Hackley Morrison Co., Inc., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a double-cylinder, double-friction drum hoisting engine, without boiler, cylinders about 8¼ x 10 in., or larger, suitable for cableway service; two 4-ton and one 7-ton capacity gasoline locomotives, 36-in. gage; one electric pump, 50 gal. per min., under a 10-ft. suction head and 30-ft. pressure head; a number of all-steel dump cars, about 1½ to 2-yd. capacity, each; one 75-hp. compensator, three-phase, 60-cycle, 440-volt, either General Electric or Westinghouse type; two cableway carriages, suitable for single-line inclined cableway operation, and a superheater for a 500-hp. Heine or similar water-tube boiler.

The Louisa County Light & Power Co., Mineral, Va., recently organized, is completing plans for the installation of a power house, using direct-connected oil-driven units. W. Wishabaugh is president.

The City Council, Durham, N. C., has tentative plans for the installation of a municipal ice-manufacturing plant. A special committee has been appointed to arrange details and secure estimates of cost, headed by Y. E. Smith, chairman.

The Atlantic Can Co., 2031-33 Fountain Street, Baltimore, plans to replace the portion of its machine shop destroyed by fire July 13. An official estimate of loss has not been announced. The company has been occupying the two-story building at address noted under lease from the Cambridge Iron & Metal Co., 2032 Aliceanna Avenue.

The Pyrites Co., Ltd., Christiana Avenue, Wilmington, Del., has awarded a general contract to the Turner Construction Co., 1713 Sansom Street, Philadelphia, for a one-story addition, 100 x 225 ft., estimated to cost $100,000 with equipment.

The Grover Gin Co., Grover, N. C., is in the market for a number of squirrel cage electric motors, 60-hp. capacity, each, three-phase, 60-cycle, 2200 volts.

The Hampton County Board of Education, Hampton, S. C., is considering the installation of manual training equipment in its proposed new high school to cost $125,000, for which foundations will be laid at once.

The Southern Engineering Corporation, Albany, Ga., is planning to purchase electric power equipment, including substation apparatus for an electric development in the vicinity of Luverne, Ala.

D. A. Burwell, Stovall, N. C., is desirous of getting in touch with manufacturers of wooden wheels for automobiles, with view to quantity purchases.

R. W. Rigsby, city manager, Durham, N. C., is taking bids until Aug. 4 for equipment for extensions in the municipal waterworks, including three motor-driven low-head centrifugal pumps, 200 to 700-gal. per min. capacity, with accessory apparatus. William M. Piatt, Roxboro Road, is engineer.

The Duntile & Cement Products Co., 2501 Eastern Avenue, Baltimore, has been organized with capital of $100,000 to manufacture building blocks. One plant has been started on an area of about 700 acres and it is planned to establish four plants at other nearby points. The company is in the market for light rails and rolling stock, also cement, waterproofing, conveyors, belting, etc.

The Pressu-Washer Co. has been organized with $100,000 capital stock to manufacture mechanical equipment. Business has been started in a small way. Address Robert E. Denny, 204 Jefferson Standard Building, Greensboro, N. C.

Pacific Coast

SAN FRANCISCO, July 15.

PLANS are being considered by the United States Metal Products Co., 330 Tenth Street, San Francisco, for a two-story factory at Third Street and Williams Avenue, 208 x 415 ft., to cost more than $85,000 with equipment.

The San Joaquin Light & Power Corporation, Fresno, Cal., has secured permission from Wilson and Moorhouse Creeks, tributaries of the Middle Fork of the Tule River, Tulare County, for a proposed hydroelectric power development, estimated to cost $11,500,000 with transmission system.

The Southern California Edison Co., Third Street and Broadway, Los Angeles, has plans for a one-story storage and distributing building, 95 x 100 ft., with service and repair department, estimated to cost $35,000.

The Concrete Products Co., Oakland, Cal., is having plans drawn for a one-story plant at High and Howard Streets, to cost approximately $25,000. A. Schomig, 1268 Forty-seventh Avenue, is architect.

The Crown-Willamette Paper Co., Camas, Wash., has awarded a general contract to A. Guthrie & Co., Sherlock Building, Portland, Ore., for a two-story mill, 40 x 90 ft. Headquarters of the company are at 248 Battery Street, San Francisco.

The Spokane Oxy-Acetylene Welding Co., 2023 Maxwell Avenue, Spokane, Wash., is completing plans for a one-story addition, and has arranged a fund of about $90,000 for this work and the purchase of equipment. Howard Russell is president.

The Sierra Mfg. Co., Sacramento, Cal., recently formed with a capital of $500,000, is planning the construction of a local factory for the manufacture of gas appliances, ranges and kindred products. The company is headed by H. W. Laramie, A. B. Reynolds and C. L. Whittemore, all of Sacramento.

The Feather River Power Co., 582 Market Street, San Francisco, will proceed with hydroelectric power developments on Grizzly Creek, a tributary of the North Fork of the Feather River, with estimated capacity of 29,600 hp., estimated to cost $7,700,000; and on Milk Ranch Creek and other tributaries of the North Fork of the Feathers River, Plumas County, with capacity of 11,285 hp., estimated to cost $5,000,000.

E. A. O'Neill of the Oregon Pulp & Paper Co., Salem, Ore., is at the head of a project to organize the Western Paper Converting Co., and to build a new plant in the vicinity for the manufacure of paper specialties, estimated to cost $200,000 with machinery.

The Olympic Calpet Refining Co., Seattle, recently organized by officials of the California Petroleum Corporation, Los Angeles, as a subsidiary, has tentative plans for a new oil refinery at Smith, Wash., estimated to cost $500,000 with equipment.

An appropriation of $250,000 has been arranged by the Southern California Edison Co., Los Angeles, for a new power plant at Santa Barbara, Cal.

The Crane Co., Chicago, will erect a six-story factory branch and distributing plant, 100 x 130 ft., at Los Angeles. Only three floors will be constructed for the present, estimated to cost $100,000. Morgan, Walls & Clements, Van Nuys Building, Los Angeles, are architects.

The Lone Pine Mining & Milling Co., Julian, Cal., is planning to purchase additional equipment, including a single roll rock crusher and auxiliary apparatus.

The Roentgen Co., 853 Folsom Street, San Francisco, incorporated with $1,500,000 capital stock under Delaware laws, is engaged in manufacturing X-ray equipment. Additional lines will be taken up later. E. C. Duncan is one of the principals.

Canada

TORONTO, July 20.

DEMAND for machine tools in this market is more active with a good volume of business in single tools. Bids are being asked for equipment for waterworks and electric plants, pulp and paper mills, which will be closed before the end of the month. Buying for the automotive industry continues one of the main features of the market, but orders have fallen off slightly compared with those of a few weeks ago. The replacement requirements for car shops is resulting in a steady demand for single tools. Small tools are moving well with the greater part of current buying for immediate needs.

C. B. Snell, Exeter, Ont., will build a garage and repair shop and is interested in complete equipment.

The Wayagamack Pulp & Paper Co., Ltd., Three Rivers, Que., has awarded additional contracts in connection with the erection of a $3,000,000 addition to its plant.

The St. Lawrence Paper Mills, Ltd., 77 Notre Dame Street, has let a number of contracts for a $2,000,000 addition to its mills at Three Rivers, Que. Additional equipment is still to be purchased.

The Willard Storage Battery Co., 100 Sterling Road, Toronto, is building a $15,000 addition to its factory and will require some equipment.

Bids will be received until July 29, by the Board of Water Commissioners, Welland, Ont., for wash water tanks, filter equipment and complete pumping machinery. Charles R. Hagen, Welland, is chairman of the board; Willis Chipman, Mail Building, Toronto, is engineer.

Cloutier & Brenon, Casselman, Ont., are in the market for a double drum steam hoist; also one stiff leg derrick, 2 or 3 tons capacity, boom 40 to 50 ft. complete.

The Spencer-Kellogg Co., Chicago, Ill., will build a plant on the waterfront at Montreal, to cost $250,000.

Fire at the Canadian National Railway shops, Bridgewater, N. S., July 16 resulted in a loss of $500,000. The structures destroyed included the roundhouse, machine shop, car shop, boiler house and two or three office buildings.

The Landis Machine Co., Waynesboro, Pa., will establish a plant at Welland, Ont., where it has purchased the property of the Dominion Automatic Transportation Co., Ltd. Equipment will be installed immediately. The company manufactures dies and machines for metal thread cutting, and the Landis Machine Co., of Canada, Ltd., has been formed to carry on operations.

The E. Phillips Glass Co., Oshawa, Ont., has started work on an addition to its plant for which equipment will be required. The addition will be two-stories of concrete construction and will house the plate glass department.

Western Canada

Plans are being prepared by engineers of the Spanish River Pulp & Paper Co., Dayton, Ohio, for a plant to be erected at Fort Alexander, Man., for the Manitoba Pulp & Paper Co., Ltd., 903 McArthur Building, Winnipeg, Man., estimated to cost $4,500,000. Bids will be called immediately. The engineers are interested in prices of pulp and paper mill machinery, also dynamos, motors and power house equipment. Construction work will start before Aug. 10.

The city of Regina, Sask., will spend $420,000 during the year on additions and extensions to public works, including the installation of another electric power unit.

Spillers Overseas, Ltd., will spend $800,000 on the construction of a flour mill at Calgary, Alta., exclusive of machinery and other equipment. Construction will start as soon as plans have been completed, according to Lloyd Tanner, managing director.

The foundry owned by the Western Prairie Foundry, Ltd., Portage la Prairie, Man., was destroyed by fire recently with loss estimated at $75,000.

Foreign

THE Chamber of Commerce of the United States of America in the Argentine Republic, Buenos Aires, Argentina, has received an inquiry (No. 1050) from a company in Buenos Aires, desiring to get in touch with American manufacturers of gasoline engines from 1 to 10 hp.

The Municipal Government, Ibague, Colombia, South America, has plans under way for the installation of an electric light and power house for city service. William Boaz, Bogota, Colombia, United States commercial attaché, has information regarding the project.

The American Chamber of Commerce in France, 32 Rue Taitbout, Paris, France, has received an inquiry (17/3084) from a company at Paris desiring to get in touch with American manufacturers of washing machines and other labor-saving equipment, also manufacturers of steam-heating apparatus.

Harold P. Tompkins, coal operator and inventor of the Tompkins extension rail, states that arrangements have been made by the Midland Steel Products Co., Cleveland, manufacturer of the Tompkins rail in the United States, Canada and Mexico, with the Banks-Miller Supply Co., Huntington, W. Va., Fairmont Supply Co., Fairmont, W. Va., Kentucky Mine Supply Co., Middlesboro, Ky., and the Scranton Supply & Machinery Co., Scranton, Pa., to act as distributors in their respective territories. This device, recently patented and put on the market, is described as facilitating the laying of projections or extensions without tools or supplies.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general headings of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	7.00c. to 7.25c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in. base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.30c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.65c.
Toe-calk, ½ x ⅝ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	7.00c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds and hex	4.00c.
Squares and flats	4.50c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	3.80c. to 4.00c.	.....
Nos. 22 and 24	3.85c. to 4.25c.	4.60c.
No. 26	3.90c. to 4.30c.	4.65c.
No 28*	4.00c. to 4.40c.	4.75c.
No. 30	4.20c. to 4.60c.	.....

Galvanized

	Per Lb.
No. 14	4.10c. to 4.50c.
No. 16	4.25c. to 4.65c.
Nos. 18 and 20	4.40c. to 4.80c.
Nos. 22 and 24	4.55c. to 4.95c.
No. 26	4.70c. to 5.10c.
No. 28*	5.00c. to 5.40c.
No. 30	5.50c. to 5.90c.

*No. 28 lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Weld	Black	Galv.	*Wrought Iron*	Black	Galv.
⅛ in. Butt	46	29	⅛ in. Butt	4	+19
¼ in. Butt	51	37	¼ in. Butt	11	+ 9
1-3 in. Butt	53	39	1-1½ in. Butt.	14	+ 6
2½-6 in. Lap	48	35	2-in. Lap	5	+14
7 & 8 in. Lap	44	17	3-6 in. Lap	11	+ 6
11 & 12 in. Lap.	37	12	7-12 in. Lap.	3	+16

Bolts and Screws

Machine bolts, cut thread, 40 and 10 per cent off list
Carriage bolts, cut thread, 30 and 10 per cent off list
Coach screws, 40 and 10 per cent off list
Wood screws, flat head iron,
72½, 25, 10 and 5 per cent off list

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c.
Annealed, soft	4.50c.
Galvanized, annealed	5.15c.
Coppered, basic	5.15c.
Tinned, soft Bessemer	6.15c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	18⅝c. to 19⅝c.
High brass wire	19⅛c. to 20⅛c.
Brass rods	16⅜c. to 17⅜c.
Brass tube, brazed	26⅝c. to 27⅝c.
Brass tube, seamless	23¼c. to 24¼c.
Copper tube, seamless	24¼c. to 25¼c.

Copper Sheets

Sheet copper, hot rolled, 21¼c. to 22¼c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14x20		
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Prime	Seconds
		80 lb.	$6.15	$5.90
		90 lb.	6.30	6.05
		100 lb.	6.45	6.20
IC..$11.25	$8.85	IC..	6.65	6.40
IX.. 12.85	10.85	IX..	7.85	7.60
IXX.. 14.40	12.55	IXX..	9.00	8.75
IXXX.. 15.75	13.85	IXXX..	10.35	10.10
IXXXX.. 17.00	15.05	IXXXX..	11.35	11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	62c.
Bar	63c. to 66c.

Copper

Lake ingot	16¾c.
Electrolytic	16½c.
Casting	16 c.

Spelter and Sheet Zinc

Western spelter	9¼c.
Sheet zinc, No. 9 base, casks	12½c., open 13c.

Lead and Solder*

American pig lead	9½c. to 12c.
Bar lead	12c.
Solder, ½ and ½ guaranteed	40c.
No. 1 solder	37c.
Refined solder	30½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	20c. to 21c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	38c.

Old Metals

The market continues strong and trading is active. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	12.00
Copper, heavy wire	11.50
Copper, light bottoms	9.50
Brass, heavy	7.25
Brass, light	6.00
Heavy machine composition	9.25
No. 1 yellow brass turnings	8.25
No. 1 red brass or composition turnings	8.50
Lead, heavy	7.00
Lead, tea	6.00
Zinc	4.50
Cast aluminum	17.00
Sheet aluminum	17.00